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Aims and Scope

The journal aims to provide a platform for researchers, scientists and academicians to share knowledge and ideas in the form of high-quality articles, either original research or review, covering the main fields of anthropology, business, economics, education, environmental studies, geography, human resource management, linguistics, organisational studies, political science, psychology, social policy, social work, sociology and related fields.

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Exploring Education Students' Awareness and Knowledge of Blockchain Technology in Education

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Abstract

This study examines the awareness, knowledge, and perceptions of blockchain technology in education among 16 Chinese nationals enrolled in an international education program in Thailand, using a 5-point Likert scale questionnaire. The results show general interest in blockchain's potential applications in education, particularly in areas such as credential verification, transparency of academic records, and secure digital student records. However, the findings reveal a significant gap in respondents' understanding and familiarity with blockchain technology. Still, there is strong optimism about its future role in education, with many participants expressing interest in learning more about blockchain. The study suggests that educational institutions should offer training programs, implement pilot projects, and collaborate with blockchain experts to close the knowledge gap. Future research could explore the practical implementation of blockchain in education, its impact on learning outcomes, and the obstacles to its adoption.

Keywords: Blockchain technology, education, awareness, credential verification, transparency, digital records, educational technology.

Introduction

Blockchain technology is making significant advancements in the education sector, offering applications that could transform academic practices. Universities and educational institutions are adopting blockchain to improve data management and security, as well as streamline administrative processes. Blockchain provides secure, decentralized systems for storing and verifying academic records, reducing the risk of fraud and ensuring data integrity. It is increasingly used for managing student credentials, such as diplomas, certificates, and transcripts, facilitating the verification of academic histories. This system allows students to control their academic records, making it easier to share credentials when applying for jobs or transferring between institutions (Maryville University, 2021). Beyond record-keeping, blockchain also influences curriculum management, online education, and tuition payment systems.

One major advantage of blockchain technology in education is its ability to improve transparency and security in academic record-keeping. Institutions can issue verifiable and tamper-proof diplomas and certificates, reducing the occurrence of fraudulent credentials (Maryville University, 2021). Additionally, blockchain’s secure infrastructure ensures that once data is recorded, it cannot be altered, maintaining the authenticity of academic achievements. Blockchain also supports decentralized systems, reducing reliance on centralized administrative structures and enabling institutions to share academic records

securely across borders. This promotes student mobility and transparency in accreditation processes, benefiting both institutions and students (Loukil, Abed, & Boukadi, 2021). However, the widespread adoption of blockchain in education faces obstacles related to integration with existing systems, scalability, and user acceptance.

In addition to its use in credentialing, blockchain technology offers various applications for improving the efficiency of educational operations. Blockchain enables the creation of smart contracts, automating administrative tasks such as grading, issuing certificates, and managing course content. Smart contracts also improve the management of online education platforms, ensuring secure, traceable assessments and increasing trust between students, faculty, and institutions (Loukil et al., 2021). Moreover, the decentralized nature of blockchain supports access to open educational resources, promoting lifelong learning initiatives. These developments have the potential to make education more accessible and personalized, benefiting students, educators, and institutions. However, blockchain adoption remains in the early stages, and many institutions face difficulties in integrating it into existing infrastructures (Bhaskar, Tiwari, & Joshi, 2021).

Blockchain's role in education extends to improving the management of research data, ensuring the security and accessibility of academic research. Universities like the University of Utah and MIT are adopting blockchain to enhance data access and collaboration in scientific research (Doughman, 2024). Through blockchain's decentralized nature, research institutions can securely store large datasets, making them more accessible to researchers worldwide. Blockchain’s ability to create immutable records ensures that research data remains tamper-proof, promoting transparency and accountability in scientific discovery. Additionally, blockchain is being integrated with artificial intelligence (AI) to address global issues such as healthcare and environmental sustainability (Doughman, 2024). This integration improves data security and supports responsible research practices by maintaining the integrity of shared data.

Blockchain technology faces several obstacles in widespread adoption, particularly related to scalability and cost. As educational institutions handle large volumes of data, the increased load can slow blockchain transactions, presenting scalability issues (Maryville University, 2021). The cost of implementing blockchain systems, including infrastructure and training, can be a significant obstacle, especially for smaller institutions with limited resources. Concerns regarding data privacy and compliance with state and federal regulations also complicate implementation (Kohli & Liang, 2021). To address these issues, initiatives such as the Education Blockchain Action Network and the Education Blockchain Initiative are working to develop collaborative solutions to support blockchain integration in education (Maryville University, 2021).

Another significant aspect of blockchain in education is its potential to reshape the delivery of learning itself. Blockchain has been integrated into learning management systems (LMS) to enhance both the administrative and instructional aspects of education. For instance, blockchain can facilitate the development of digital curricula, improve the use of educational applications, and process educational data in a secure, transparent manner (Rahardja et al., 2022). This is particularly valuable in online learning environments, where blockchain provides secure platforms for managing digital assessments and enabling collaborative learning. By ensuring the traceability and privacy of student activities, blockchain technology can enhance the trust between students, faculty, and educational institutions. As a result, the learning process becomes more efficient, transparent, and secure, particularly for students in remote or non-traditional education settings.

The widespread adoption of blockchain in education faces several obstacles. For blockchain to be integrated into educational systems, it must address issues related to technical infrastructure, user acceptance, and scalability (Berdik et al., 2021). As the

technology evolves, institutions and organizations must invest in the necessary infrastructure and training to ensure effective implementation. Additionally, the education sector must resolve concerns related to data privacy, regulatory compliance, and the integration of blockchain with existing systems. However, ongoing research and development of blockchain technologies, along with growing interest from educational institutions, suggest that blockchain will continue to have an increasing impact on the future of education (Kohli & Liang, 2021).

Blockchain technology has the potential to transform education, yet there is limited awareness and understanding of its applications within educational settings. Many educators, students, and administrators lack familiarity with how blockchain operates and how it can be integrated into educational practices. Although blockchain is recognized for improving transparency, security, and decentralization in education, its actual implementation remains in the early stages. This research aims to examine the level of awareness and understanding of blockchain in education and explore its potential uses, such as in credential verification, data privacy, and learning accessibility.

This research will provide valuable information about the current state of blockchain awareness and understanding in the education sector. It will help educational institutions identify the potential and limitations of blockchain adoption. The findings can inform the development of educational programs, pilot projects, and strategies for integrating blockchain into educational settings. Additionally, this research will contribute to the academic discussion on educational technology by examining how blockchain can improve efficiency, security, and accessibility in education. The study will also serve as a foundation for future research on the practical use of blockchain in education.

The primary objectives of this research are to assess the level of awareness and understanding of blockchain technology among educators, students, and administrators in educational settings. The study aims to identify perceptions regarding the potential applications of blockchain in education, particularly in areas such as credential verification, data privacy, and learning accessibility. Additionally, the research seeks to examine the current use and implementation of blockchain-based platforms or technologies within educational institutions. Finally, the study aims to explore the factors influencing the adoption of blockchain technology in education and propose strategies for enhancing its integration into educational practices.

Literature Review

Blockchain technology has the potential to reshape educational systems globally. It offers a decentralized framework that ensures transparency, security, and immutability, qualities that are valuable in educational settings. Blockchain securely stores academic credentials, transcripts, and diplomas, preventing fraud and simplifying the verification process (Maryville University, 2021). As educational institutions seek to reduce administrative overhead, blockchain provides a solution by automating tasks such as grading and certificate issuance through smart contracts (Loukil, Abed, & Boukadi, 2021). These features can reduce the time, effort, and costs associated with traditional administrative systems, making the education process more efficient.

Blockchain has the potential to transform research data management in education. Universities such as the University of Utah and MIT are experimenting with blockchain to improve access to and collaboration on scientific data (Doughman, 2024). Blockchain's record-keeping ensures that research data remains untampered, promoting trust and accountability among researchers. It also facilitates more efficient data sharing, opening

opportunities for collaborative research and global scientific cooperation. Providing a secure and transparent platform for storing and sharing datasets, blockchain could address the ongoing issue of data manipulation in academic research.

Blockchain has the potential to enhance personalized learning and lifelong education. Its ability to securely store and manage educational records allows students to control their academic histories and share achievements with prospective employers or institutions (Loukil et al., 2021). This student-focused approach is particularly valuable in lifelong learning, where individuals continuously develop and refine their skills. Linking blockchain with online learning platforms enables educational systems to track a learner's progress across multiple courses, programs, and institutions, creating a flexible educational experience that extends beyond traditional degree pathways. The technology's secure and transparent record-keeping in online learning environments can address concerns over academic integrity and improve trust among students, faculty, and institutions (Rahardja et al., 2022).

The adoption of blockchain in education faces several obstacles. One significant issue is scalability. As educational institutions and online platforms adopt blockchain technology, the volume of academic records and transactions will increase. This could lead to performance problems, such as delays in transaction processing, unless blockchain systems are optimized for high-volume environments. Additionally, the cost of implementing blockchain remains a major concern, especially for smaller institutions with limited financial resources. Institutions must invest in the necessary infrastructure, training, and security measures to fully integrate blockchain into their systems (Kohli & Liang, 2021). The initial investment and ongoing maintenance costs could be too high for many schools, particularly in developing regions with limited resources.

Privacy concerns are a major factor in limiting blockchain's widespread adoption. Blockchain's transparency, while an advantage, can also pose risks to personal privacy. In education, this is especially important since students' academic records contain personal and confidential information. Blockchain allows for decentralized storage, but ensuring that students maintain control over who accesses their data is vital. Institutions must address these concerns and comply with privacy laws such as the GDPR in Europe and FERPA in the United States (Maryville University, 2021). As blockchain technology evolves, educational institutions will need to collaborate with privacy experts to develop solutions that balance transparency and data protection.

Blockchain integration into educational institutions requires careful consideration of existing systems and infrastructure. Many institutions rely on legacy systems that may not be compatible with emerging technologies. This issue emphasizes the need for thorough assessments before transitioning to blockchain-based systems. Successful adoption depends on the ability to integrate blockchain with current administrative systems, learning management systems, and student information systems (Berdik et al., 2021). Additionally, technical staff and faculty must receive training to effectively use blockchain technologies, which may require ongoing support and professional development.

The potential of blockchain to enhance educational processes is not limited to administrative functions or data security. It also extends to areas such as accreditation, where blockchain can increase transparency and trust. By allowing institutions to securely and transparently manage accreditation data, blockchain can simplify the process of certifying courses and programs, ultimately benefiting both students and employers. Blockchain also creates opportunities for global collaborations in research and education, facilitating international partnerships and exchanges by offering a standardized and universally recognized method of verifying credentials and achievements (Doughman, 2024). Furthermore, blockchain's use in managing intellectual property and patents within

academic research can ensure that the creators of new innovations receive due credit and compensation, fostering a more equitable research environment.

Methodology

This study examined the levels of awareness and knowledge of blockchain technology in education among 16 Chinese nationals studying in an international education program in Thailand. A 15-item questionnaire was used, featuring statements assessed on a 5-point Likert scale ranging from "Strongly Disagree" to "Strongly Agree." The questionnaire addressed participants' understanding of blockchain technology, its potential applications in education, and its perceived impact on the future of educational systems. The questionnaire was pre-tested for reliability (.90) and administered to participants in a group setting in person.

Data were analyzed using descriptive statistics, focusing on the mean and standard deviation of responses to identify trends and variations in participants ’awareness and knowledge of blockchain in education. The study aimed to provide insights into how well-prepared education students were to engage with emerging technological tools, such as blockchain, within the context of teaching and learning. Ethical considerations, including informed consent and data confidentiality, were maintained throughout the research process.

Results and Discussion

The following section reveals the questionnaire results based on the awareness and knowledge of Blockchain in education.

I am familiar with the concept of blockchain technology.
Strongly Agree=12.5% Agree=18.8% Neutral=25% Disagree=25% Strongly Disagre=18.8% Mean=2.81 Standard Deviation=1.33

I understand how blockchain works.
Strongly Agree=12.5% Agree=12.5% Neutral=25% Disagree=18.8% Strongly Disagree=31.3% Mean=2.56 Standard Deviation=1.41

I believe blockchain has potential applications in education.
Strongly Agree=50% Agree=37.5% Neutral=6.3% Disagree=6.3% Strongly Disagree=0% Mean=4.31 Standard Deviation=.87

I have heard of blockchain being used for credential verification in education.
Strongly Agree=25% Agree= 25% Neutral=25% Disagree=25% Strongly Disagree=0% Mean=3.50 Standard Deviation=1.15

I know that blockchain can help in creating secure digital records for students.
Strongly Agree=37.5% Agree=25% Neutral=25% Disagree=12.5% Strongly Disagree=0% Mean=3.88 Standard Deviation=1.09

I am aware of how blockchain can be used to improve data privacy in educational institutions.
Strongly Agree=12.5% Agree=31.3% Neutral=31.3% Disagree=18.8% Strongly Disagree=6.3% Mean=3.25 Standard Deviation=1.13

I believe blockchain can support decentralized learning platforms.
Strongly Agree=37.5% Agree=37.5% Neutral= 12.5% Disagree=0% Strongly Disagree=12.5% Mean=3.88 Standard Deviation=1.13

I think blockchain technology can improve the transparency of academic records.
Strongly Agree=37.5% Agree=37.5% Neutral= Disagree=0% Strongly Disagree=6.3% Mean=4.00 Standard Deviation=1.10

I have used blockchain-based platforms or applications for educational purposes.
Strongly Agree=18.8% Agree=18.8% Neutral=18.8% Disagree=18.8% Strongly Disagree=25% Mean=2.88 Standard Deviation=1.50

I believe blockchain will play a significant role in the future of education.
Strongly Agree=62.5% Agree=31.3% Neutral=6.3% Disagree=0% Strongly Disagree=0% Mean=4.56 Standard Deviation=.63

I think blockchain could make education more accessible to people globally.
Strongly Agree=50% Agree=37.5% Neutral=12.5% Disagree=0% Strongly Disagree=0% Mean=4.38 Standard Deviation=.72

I feel confident in using blockchain technology for educational purposes.
Strongly Agree=37.5% Agree=31.3% Neutral=12.5% Disagree=12.5% Strongly Disagree=6.3% Mean=3.81 Standard Deviation=1.28

I believe blockchain could enhance the efficiency of administrative processes in education.
Strongly Agree=37.5% Agree=31.3% Neutral=18.8% Disagree=6.3% Strongly Disagree=6.3% Mean=3.88 Standard Deviation=1.20

I think blockchain could help in reducing academic fraud and cheating.
Strongly Agree=37.5% Agree=31.3% Neutral=12.5% Disagree=12.5% Strongly Disagree=6.3% Mean=3.81 Standard Deviation=1.28

I would like to learn more about the use of blockchain in education.
Strongly Agree=68.8% Agree=18.8% Neutral=12.5% Disagree=0% Strongly Disagree=0% Mean=4.56 Standard Deviation=.73

The results of the questionnaire reveal a mixed level of awareness and understanding of blockchain technology in the context of education. While there is significant optimism about its potential, there is also a noticeable gap in actual knowledge and experience with blockchain.

In terms of familiarity, respondents indicated a moderate level of awareness, with 12.5% strongly agreeing and 18.8% agreeing that they are familiar with blockchain technology. However, 25% disagreed, and another 18.8% strongly disagreed, resulting in a mean score of 2.81, which lies between "Neutral" and "Disagree." This suggests that many participants have limited knowledge of the technology. Similarly, understanding of how blockchain works was also low, with a mean of 2.56, closer to "Disagree." A notable portion (31.3%) strongly disagreed with this statement, indicating limited comprehension of the technology's mechanics.

Despite these gaps in understanding, a large majority of respondents (87.5%) expressed the belief that blockchain has potential applications in education. This was reflected in the mean score of 4.31, which is strongly positive. Respondents also showed moderate awareness of blockchain being used for credential verification in education, with a mean score of 3.50, indicating a neutral to somewhat positive stance. Furthermore, 62.5% recognized that blockchain could help in creating secure digital records for students, suggesting confidence in its security applications in education.

In terms of blockchain's broader impact on education, the responses were generally positive. A strong majority (75%) agreed that blockchain could support decentralized learning platforms, with a mean score of 3.88. Similarly, respondents believed that blockchain could improve the transparency of academic records, with a mean of 4.00. This indicates a solid understanding of blockchain's potential to enhance trust and accountability in academic processes.

When it came to actual experience with blockchain-based educational platforms, only 18.8% of respondents reported having used such platforms. The mean score for this item was 2.88, suggesting that practical experience with blockchain in education is still limited. Similarly, confidence in using blockchain technology for educational purposes was moderate, with a mean of 3.81, but there were still a number of respondents who were unsure or disagreed. This indicates that while there is interest, there is a need for further education and confidence-building in using blockchain tools.

Looking to the future, respondents expressed a strong belief that blockchain will play a significant role in the future of education, with a mean score of 4.56. A similar level of optimism was expressed regarding blockchain's potential to make education more accessible globally, with 87.5% agreeing. Additionally, there was a clear desire to learn more about blockchain's use in education, with 87.5% indicating interest in further education on the subject. This was reflected in the mean score of 4.56, which demonstrates a strong curiosity and a willingness to engage with blockchain technology.

Although there is a positive outlook on blockchain's potential to improve various aspects of education, including credential verification, data privacy, and transparency, the results highlight a gap in actual understanding and experience. There is a strong desire for further education and training, which presents an opportunity for educational institutions to introduce blockchain-related learning initiatives. By increasing awareness and offering practical experience, educators and students could be better prepared for a blockchain-enhanced educational future.

Conclusion and Suggestions

The results of this questionnaire highlight a growing interest in and optimism about the potential of blockchain technology in education. Respondents acknowledge the ability of blockchain to enhance transparency, improve credential verification, and create secure digital records. However, there is a noticeable gap in familiarity and understanding, as many participants demonstrated limited knowledge of how blockchain functions and have not yet had direct experience with blockchain-based educational platforms. Although there is clear enthusiasm about blockchain's future role in education, the lack of hands-on experience and practical understanding suggests that more education and exposure to the technology are needed. Overall, the data reflects a positive outlook for blockchain in education, alongside the recognition that further learning and engagement are necessary for its successful integration.

To bridge the knowledge gap and make the most of the optimistic outlook surrounding blockchain, there are several key recommendations for educational institutions. First, offering education and training programs aimed at improving understanding of blockchain is crucial. These programs could include workshops, webinars, or online courses designed for both educators and students, with a focus on the practical applications of blockchain in education. Furthermore, pilot programs that implement blockchain-based solutions for credential verification, student records, or decentralized learning could provide valuable, hands-on experience for participants. These pilot programs would allow stakeholders to understand first-hand how blockchain works in practice and assess its effectiveness in real educational contexts.

Additionally, collaborations with blockchain experts and technology firms would help institutions stay up-to-date with the latest blockchain developments and explore real-world use cases. By partnering with experts in the field, universities and schools could build more informed strategies for integrating blockchain into their systems. Finally, awareness campaigns are needed to highlight the potential of blockchain in education. These campaigns could include publications, case studies, and discussions that show successful applications of blockchain technology.

There are several areas where future research could deepen our understanding of blockchain’s role in education. One important area is the practical implementation of blockchain in various educational contexts. Future studies could explore how blockchain can be integrated into different educational environments, such as schools, higher education institutions, or vocational training centres. Research could focus on the challenges, benefits, and scalability of blockchain-based solutions in these diverse settings. Additionally, examining the impact of blockchain on learning outcomes would be valuable. Researchers could assess whether blockchain improves access to education, enhances data security, or streamlines administrative processes, offering insight into its broader educational impact.

Another key area for research is user experience and adoption. Understanding the issues to blockchain adoption, such as resistance to change, lack of technical knowledge, or concerns about data privacy, would help to identify strategies for overcoming these challenges. Investigating these factors can provide useful guidance for institutions looking to implement blockchain technology successfully. Longitudinal studies would also be beneficial to track the long-term effects of blockchain on education. Research could explore whether blockchain leads to greater trust in academic records, reduces fraud, or improves student mobility over time. Finally, comparative studies could investigate the differences between institutions that have adopted blockchain and those that have not, providing further insight into the tangible benefits and challenges of blockchain integration.

Although blockchain has significant potential to transform education, further exploration and practical application are necessary to fully understand and realize its capabilities. By focusing on education, pilot programs, and collaborations, educational institutions can move closer to realizing the benefits of blockchain. With continued research and experimentation, blockchain could play a key role in reshaping the future of education.

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Pre-Program Perceptions of the PhD Process: An Exploration of First-Semester PhD Students' Expectations

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Abstract

This study examined the expectations of seven Chinese PhD students enrolled in an international program in Bangkok, Thailand, regarding the intellectual, emotional, and professional aspects of their doctoral journey. The results showed that students anticipated the PhD process to be intellectually demanding, with a focus on developing research skills and enhancing critical thinking. Although students recognized potential emotional difficulties, such as stress and isolation, they remained optimistic about the academic and career benefits of pursuing a PhD. The study stressed the importance of supportive supervision, alignment of research interests with supervisors, and intrinsic motivation in shaping students' experiences. The findings suggest that institutions should implement pre-enrollment orientation programs to manage expectations and provide better support during the first semester. This research contributes to understanding the factors that influence PhD students' early experiences and offers recommendations for improving student engagement and retention in doctoral programs.

Keywords: PhD students, academic challenges, emotional challenges, supervisor support

Introduction

Earning a PhD is often seen as a prestigious and transformative, culminating in the creation of new knowledge in a specific field of study (Swinburne University, n.d.). However, doctoral research, particularly during the dissertation phase, often involves difficult and demanding tasks. PhD students must conduct original research and manage emotional, intellectual, and practical obstacles that can affect their progress. The dissertation process, meant to demonstrate a student's expertise and contribution to the field, often becomes a source of stress and uncertainty. It typically requires years of work and persistence.

One common issue faced by doctoral students is the sense of isolation and self-doubt during the dissertation process. According to Inomics (2023), many PhD students experience loneliness, as research is often solitary and requires long periods of focus without immediate feedback or validation. This isolation is worsened by the pressure to make an original contribution to knowledge, leading to anxiety and self-criticism. Additionally, students often have difficulty balancing academic responsibilities with personal life, resulting in burnout and reduced motivation over time. In a competitive academic environment, the need to appear competent can further increase these pressures.

Students' perceptions of the PhD process often differ from the reality of the experience. The pursuit of a doctoral degree is often seen as an intellectual adventure or a clear route to career advancement. However, the experience can be more uncertain. Many students enter PhD programs with idealized expectations, only to face the difficult realities of academic research and uncertain post-PhD employment. Some students find a lack of guidance or mentorship, and navigating complex research problems can lead to dissatisfaction with their work. Other students may not be able to cope with the workload and course requirements and leave the program (Princeton Review, 2025).

The PhD process can offer significant academic and professional rewards. However, it requires resilience, effective time management, and strong support to overcome difficulties. According to Franklin University (2023), failure to complete the dissertation is often due to lack of motivation or mismanagement of expectations. Understanding the factors that influence doctoral students' perceptions can help institutions provide better support. Addressing these issues will create a more supportive academic environment and ensure that students can contribute to the advancement of knowledge in their fields.

The doctoral process, especially in its early stages, can significantly affect students' academic performance, well-being, and overall view of the PhD experience. First-semester PhD students often enter their programs with pre-program perceptions that differ from the realities they encounter. These perceptions influence motivation, expectations, and the ability to manage the pressures of doctoral research. Although research on doctoral education has grown, there is a lack of studies focusing on the pre-program perceptions of first-semester PhD students, particularly in international programs. Without a clear understanding of how these students view the PhD experience before facing its realities, academic institutions may struggle to provide appropriate guidance and support to improve student success, satisfaction, and retention. Therefore, exploring the initial perceptions of first-semester PhD students is important for improving the PhD experience and helping students navigate their studies with clarity and resilience.

This study addresses a gap in current research on doctoral education by focusing on the pre-program perceptions of first-semester PhD students. Understanding these perceptions is important for several reasons. First, initial expectations can affect students' mental health, motivation, and ability to persist in the program. If students enter with unrealistic or idealized views of the PhD process, they may face greater disappointment, stress, or disengagement when confronted with the demands of research, academic pressures, and isolation. Second, early perceptions can influence interactions with supervisors, peers, and academic departments, impacting academic success and a sense of belonging. Lastly, this research offers valuable information for academic institutions to tailor orientation programs, mentorship initiatives, and support systems to better meet the needs and expectations of first-semester students, ultimately improving the doctoral experience and reducing attrition rates. Understanding the factors that shape students' initial perceptions of the PhD process can help develop more effective, student-centered strategies for supporting doctoral students from the start.

The primary objectives of this study are as follows:

1. To examine the expectations of Chinese PhD students regarding the intellectual and academic challenges they anticipated during their doctoral studies in an international program in Bangkok, Thailand.
2. To explore the personal and emotional challenges the students expected to face, including stress, isolation, and balancing academic and personal life.
3. To assess the students’ expectations about the role of supervisor guidance and departmental support in helping them succeed throughout their PhD journey.

4. To investigate the students' beliefs about the impact of completing a PhD on their career prospects, including opportunities for networking and future academic or research positions.

By addressing these objectives, the study aims to contribute to a deeper understanding of the early doctoral experience and provide actionable insights for improving the PhD journey from its very beginning.

Literature Review

The experience of doctoral students, particularly in the first semester, is influenced by a range of factors that impact their perceptions of the PhD process. Although there is a wealth of research exploring doctoral students' experiences, much of the focus has been on factors affecting overall success, completion, and well-being, with less attention given to the early stages of a PhD journey. Recent studies highlight various external and internal factors that shape these perceptions, with external factors including supervision, institutional support, and financial resources, and internal factors such as motivation, self-regulation, and academic identity (Sverdlik et al., 2018). Understanding these influences is important for supporting doctoral students, particularly in their early months, to ensure their engagement and success throughout their academic careers.

A significant external factor affecting first-semester PhD students is the relationship with their supervisor, which influences their early experience and perceptions of the PhD process. Van Rooij, Fokkens-Bruinsma, and Jansen (2021) suggest that a supportive supervisor-student relationship and a project aligned with the supervisor's expertise are important for student satisfaction and reducing dropout intentions. This is particularly important in the early stages of the PhD when students are adjusting to new academic expectations. Additionally, research by Leijen, Lepp, and Remmik (2016) shows that poor supervisory relationships and unclear expectations can lead to early dissatisfaction and increase the likelihood of students leaving doctoral programs. For first-semester students, these early interactions can significantly shape their views on the PhD process and influence their long-term academic path.

Internal factors, such as motivation and academic identity, influence how doctoral students perceive their experience. Cornér et al. (2021) find that a PhD student's level of personal interest in their research topic strongly affects their resilience against burnout and intentions to drop out. First-semester students who begin their PhD with a clear sense of academic interest and motivation are more likely to view the process as an exciting intellectual pursuit rather than an overwhelming task. In contrast, students with lower motivation or weak academic identity may find it harder to engage with their studies, leading to early disengagement. Furthermore, Sverdlik et al. (2018) stress that intrinsic motivation, such as the desire for personal growth and mastery of the subject, helps students manage the stress and pressure of doctoral studies.

Finally, while much of the literature focuses on student success and completion, it is important to consider the challenges that first-semester students face and how these may shape their perceptions of the PhD. Brailsford (2010) explores the multiple motivations that lead students to embark on a PhD, such as career prospects, personal development, and intellectual curiosity. However, this decision-making process is not without its complexities. The study indicates that external influences, such as family and academic mentors, play a role in shaping students' perceptions of doctoral education, suggesting that early perceptions

can be influenced by external encouragement or discouragement. For first-semester students, these early stages can either reinforce or challenge their initial motivations and set the tone for their experience in the doctoral program.

First-semester PhD students' perceptions of the PhD process are shaped by a combination of external factors, such as supervision and institutional support, and internal factors like motivation and academic identity. These early months of a PhD program are crucial in determining student satisfaction, success, and retention, as students begin to adapt to the challenges of doctoral research. Studies indicate that a positive supervisor-student relationship, clear expectations, and a high level of intrinsic motivation contribute to more favorable perceptions of the doctoral journey (Van Rooij et al., 2021; Cornér et al., 2021). Conversely, poor supervision, misalignment of research interests, and lack of motivation can lead to negative perceptions, early disengagement, and even dropout intentions (Leijen et al., 2016).

The existing literature emphasizes the importance of addressing these factors in the early stages of a PhD program. Universities and departments must be proactive in offering support to first-semester students to foster a positive academic environment and help them navigate the transition into doctoral study. A comprehensive approach that includes effective mentoring, clear communication of expectations, and strategies to maintain motivation could improve students' perceptions of the PhD process and reduce dropout rates. By focusing on these factors, higher education institutions can help ensure that first-semester PhD students not only succeed academically but also maintain their well-being throughout their doctoral studies.

Methodology

The participants in this study consisted of 7 first-semester PhD students enrolled in an international doctoral program in Thailand. These students were selected from various academic disciplines, representing a diverse range of backgrounds, experiences, and motivations for pursuing a PhD. All participants were in their first semester of the program, and their participation was voluntary. The students were provided with informed consent forms outlining the purpose of the study, their rights as participants, and the anonymity and confidentiality of their responses.

The primary instrument for data collection was a Likert scale questionnaire designed to assess participants' pre-program perceptions of the PhD process. The Likert scale items measured the degree of agreement with various statements about the PhD process, with response options ranging from "Strongly Disagree" (1) to "Strongly Agree" (5). The questionnaire included both general and context-specific items, addressing key areas such as perceptions of the PhD process, expectations regarding supervisor relationships, personal motivation and academic identity, work-life balance, and institutional support.

The perceptions of the PhD process explored students' expectations regarding the intellectual, emotional, and logistical aspects of the PhD journey. Supervisor relationships focused on students' expectations regarding the role of supervisors, communication styles, and anticipated support. The section on personal motivation and academic identity assessed students' perceptions of their own motivation to complete the PhD, as well as their sense of readiness and academic identity. The work-life balance section addressed students' perceptions of their ability to manage academic responsibilities alongside personal or social commitments, while the institutional support section assessed expectations regarding institutional resources, support services, and overall satisfaction with the program's structure.

Data were collected through the distribution of the Likert scale questionnaire to all 7 participants during an introductory seminar for first-semester PhD students. The questionnaire was administered in a paper format. The responses were anonymous, and students were assured that their answers would not affect their academic standing or relationship with faculty members.

Data from the Likert scale questionnaire were entered into a statistical software program. Descriptive statistics were calculated for each item on the questionnaire to identify trends in participants' pre-program perceptions of the PhD process.

This study adhered to ethical guidelines for research involving human participants. Informed consent was obtained from all participants before they completed the questionnaire, and they were informed that participation was voluntary and that they could withdraw at any time without penalty. All responses were kept anonymous, and no identifying information was collected beyond basic demographic data. The data were stored securely, and only the research team had access to the responses. The results of the study were presented in aggregate form to ensure participants' confidentiality.

A key limitation of this study was the small sample size of 7 participants, which limited the generalizability of the findings. Additionally, the study relied on self-reported data, which may have been subject to biases such as social desirability or memory recall. The use of a single Likert scale questionnaire, while efficient, did not allow for in-depth exploration of participants' perceptions, and future studies may benefit from using qualitative methods such as interviews or open-ended survey questions to complement the quantitative data.

Results and Discussion

The following sections reveals the results obtained from the questionnaire survey (see Table 1).

Table 1 shows the percentages of agreement with each statement.

Opinion / Statement	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
The PhD process will be intellectually stimulating and exciting.	57.1%	42.9%	0%	0%	0%
I expect to face significant intellectual challenges during my PhD studies.	42.9%	57.1%	0%	0%	0%
I believe the PhD process will require me to develop new skills in research and critical thinking.	71.4%	28.6%	0%	0%	0%
I anticipate that I will have clear guidance from my supervisor throughout the PhD process.	57.1%	42.9%	0%	0%	0%
I expect that my research project will align closely with my supervisor’s area of expertise.	42.9%	57.1%	0%	0%	0%

I believe that pursuing a PhD will be a lonely or isolating experience.	14.3%	14.3%	57.1%	14.3%	0%
I expect that balancing my personal life and the demands of the PhD will be difficult.	0%	42.9%	42.9%	14.3%	0%
I anticipate experiencing stress and anxiety during my PhD journey.	14.3%	57.1%	14.3%	14.3%	0%
I believe that I will need to be highly self-motivated to succeed in my PhD.	42.9%	28.6%	14.3%	14.3%	0%
I expect to encounter feelings of self-doubt during my PhD studies.	14.3%	28.6%	28.6%	28.6%	0%
I expect that completing a PhD will significantly enhance my career prospects.	71.4%	28.6%	0%	0%	0%
I believe that a PhD will provide me with opportunities to engage in meaningful academic or professional networks.	71.4%	14.3%	14.3%	0%	0%
I expect the PhD program to open doors for me to teach at a university or engage in high-level research positions.	71.4%	14.3%	14.3%	0%	0%
I expect the PhD process to be a long, challenging journey that requires significant perseverance.	28.6%	42.9%	28.6%	0%	0%
I believe that the PhD will be an intellectually and personally rewarding experience.	71.4%	28.6%	0%	0%	0%
I anticipate that my academic department will provide adequate support to help me succeed in my PhD.	57.1%	42.9%	0%	0%	0%
I expect to form strong relationships with my fellow PhD students.	71.4%	28.6%	0%	0%	0%
I anticipate that the PhD will involve significant financial pressures, including securing funding for research.	42.9%	28.6%	14.3%	14.3%	0%
I expect to have a clear understanding of the requirements and expectations of the PhD program from the start.	57.1%	42.9%	0%	0%	0%

The results from the seven Chinese PhD students studying in an international program in Bangkok, Thailand, revealed various expectations regarding their intellectual, emotional, and career challenges during their PhD journey. These students displayed a high level of enthusiasm and positivity towards their academic experience. A significant majority (99.9%) expected the PhD process to be intellectually stimulating, with all participants either strongly agreeing or agreeing. This reflected their belief that the journey would be intellectually exciting. Additionally, all participants anticipated facing significant intellectual challenges, showing that they were well aware of the academic demands and rigor involved. Moreover, they expected to develop new skills in research and critical thinking, with 100% of students expressing confidence in this aspect of their academic growth.

In terms of supervision, the students had strong expectations for guidance throughout their PhD studies. All participants expected clear guidance from their supervisors, which highlighted their desire for mentorship and support. Additionally, they believed that their research projects would closely align with their supervisor's area of expertise, signaling a positive expectation regarding the academic fit between their interests and their supervisors' knowledge.

When it came to personal and emotional challenges, the students' views were more mixed. While 14.3% strongly agreed and 14.3% agreed that pursuing a PhD would be a lonely or isolating experience, the majority (57.1%) remained neutral, indicating uncertainty about the emotional challenges of the PhD journey or a belief that isolation might not be as significant a factor. Regarding the difficulty of balancing personal life with PhD demands, 42.9% agreed that it would be challenging, while another 42.9% were neutral, showing that some students anticipated challenges in balancing their personal lives but others remained uncertain. Similarly, a majority (71.4%) expected to experience stress and anxiety during their PhD, though only a small portion (14.3%) strongly agreed with this expectation. This suggested that the students were mindful of the emotional demands of their studies but did not view stress and anxiety as inevitable.

In terms of self-motivation and self-doubt, students had varied expectations. While 42.9% strongly agreed that they needed high self-motivation to succeed, 28.6% agreed, and a significant portion (28.6%) was neutral or disagreed with feelings of self-doubt. This suggested that while they recognized the need for motivation, some did not anticipate significant internal challenges related to self-doubt.

Regarding career and professional development, the students were highly optimistic about the impact of their PhD studies. All participants believed that completing a PhD would enhance their career prospects, and the majority (85.7%) expected the PhD to provide valuable opportunities for networking within academic or professional circles. Furthermore, 85.7% of the students strongly agreed or agreed that the PhD would open doors to teaching or high-level research positions, signaling a clear belief in the long-term professional benefits of their studies.

On a broader level, the students expected the PhD process to be long and challenging, requiring significant perseverance. While 71.5% agreed that the journey would demand perseverance, the remaining students were neutral, indicating varying perceptions of the difficulty ahead. Nevertheless, 100% of students expected the experience to be intellectually and personally rewarding, reflecting their belief that the PhD process would lead to both academic growth and personal fulfillment. They also had high expectations for the support they would receive from their academic department, with all students anticipating adequate assistance throughout their studies.

The students also expected to form strong relationships with their fellow PhD students, with 100% expressing this belief. This indicated that they valued the potential for peer collaboration and camaraderie during their studies. Financial pressures were another

consideration, with 71.5% expecting such pressures, particularly in securing funding for their research. However, 14.3% disagreed with this expectation, suggesting some students felt confident that they would be able to manage financial challenges. Lastly, all students expected a clear understanding of the PhD program's requirements and expectations from the start, indicating their desire for clarity and organization from the program.

These findings reveal a group of PhD students who are intellectually driven and motivated, with high expectations for personal growth, academic success, and career development. They anticipated both intellectual challenges and personal difficulties but generally expected strong institutional and supervisory support. Emotional challenges such as stress and isolation were acknowledged, but they did not seem to dominate the students' outlook on their PhD journey. The students had a strong belief in the long-term rewards that a PhD could bring, including career advancement and professional networking, and they were confident in forming meaningful relationships within their academic community.

The first semester of a PhD program is a pivotal period that shapes students' perceptions of the entire academic path. This early stage introduces students to the demands of doctoral research and provides an opportunity to establish a solid foundation for academic success. Existing literature identifies a range of external and internal factors that influence students' perceptions of the PhD process during this time. Examining the various supports and difficulties reported in the research reveals that effective mentorship and intrinsic motivation significantly affect students' experiences and their ability to progress in the program.

The supervisor-student relationship is a significant external factor affecting first-semester PhD students. Research consistently shows that positive and supportive relationships with supervisors can reduce many difficulties faced by students, especially those related to isolation, lack of guidance, and unclear expectations (Van Rooij et al., 2021; Leijen et al., 2016). First-semester students often experience a transition from undergraduate or master's studies to the more independent, research-driven environment of the PhD. In this context, a supervisor who provides clear feedback, guidance, and emotional support can reduce feelings of uncertainty and increase students' confidence in their work. When supervisors fail to set clear expectations or provide adequate support, students may feel abandoned and demotivated, leading to dissatisfaction and a higher risk of dropout (Leijen et al., 2016). Van Rooij et al. (2021) also note that the alignment between the student's research interests and the supervisor's expertise is important, as it ensures the student is working on a project that is both engaging and feasible within the program's scope.

Internal factors, such as motivation and academic identity, also shape first-semester students' perceptions of their PhD experience. Motivation is often seen as an important factor for success in doctoral education. Intrinsic motivation, including intellectual curiosity and a desire for personal and academic growth, is linked to better resilience and lower rates of burnout (Cornér et al., 2021; Sverdlik et al., 2018). For first-semester students, high levels of intrinsic motivation help them navigate early difficulties in doctoral study, especially the uncertainty and isolation often linked to the dissertation process. Students without a strong academic identity or motivation may find it difficult to meet the demands of the program, leading to disengagement or early burnout (Cornér et al., 2021). This emphasizes the importance of developing a sense of academic identity early in a student's PhD experience, as it provides the internal drive needed to overcome obstacles and remain committed to the research process.

The decision to embark on a PhD program is often influenced by a variety of personal, academic, and social factors, with family and academic mentors playing key roles in shaping students' initial perceptions of the program (Brailsford, 2010). Many students enter the program viewing the PhD as a means of achieving career advancement or personal development. However, the reality of the PhD often contrasts sharply with these expectations

(Princeton Review, 2025). This gap between expectations and reality can lead to frustration and disappointment, potentially undermining students' motivation and engagement early in their studies. It is therefore important that academic institutions provide pre-enrollment workshops or orientation programs to help students set realistic expectations for the PhD process. These programs can also help students clarify their motivations and establish a strong foundation for their academic identity, thereby enhancing their chances of success and satisfaction in the early stages of the program (Brailsford, 2010).

The relationship between external and internal factors underscores the complexity of the first-semester PhD experience. Supportive supervision and institutional resources are important for ensuring a smooth transition. Individual factors, such as motivation and academic identity, also have significant effects on students' perceptions of the PhD process. The literature suggests that a proactive, holistic approach, which integrates effective mentoring, realistic expectation-setting, and strategies for maintaining intrinsic motivation, can improve students' perceptions and experiences during the first semester. This approach not only helps students overcome early difficulties but also enhances their long-term engagement and success in the doctoral program.

The first semester of a PhD program is a pivotal time for students as they begin to navigate the complexities of doctoral study. By addressing the key external and internal factors that influence students' perceptions of the PhD process, higher education institutions can better support first-semester students and improve their chances of success. The existing research highlights the importance of a strong supervisor-student relationship, clear expectations, and a solid foundation of intrinsic motivation in fostering positive perceptions and engagement. With targeted support and resources, universities can ensure that first-semester PhD students not only succeed academically but also maintain their well-being throughout their doctoral studies.

Conclusions and Suggestions

The findings from this study highlighted that the seven Chinese PhD students in the international program in Bangkok, Thailand, had high expectations regarding their intellectual growth, personal challenges, and professional development. These students were optimistic about the academic stimulation, the development of new research skills, and the career benefits that the PhD would bring. They also had positive expectations about their relationships with their supervisors and peers, though emotional challenges such as stress, isolation, and balancing personal life with academic demands were acknowledged but not anticipated as dominant concerns. This group of students displayed a clear understanding of the significant perseverance required in completing their PhDs and believed that the experience would be intellectually and personally rewarding.

The first semester of a PhD program is an important period where students form their perceptions of the academic path. Supportive supervision, alignment of research interests with supervisors, and intrinsic motivation influence students' experiences. A strong sense of academic identity and motivation is necessary for navigating the demands of a PhD, especially during the early stages when students face uncertainty and isolation. Academic institutions should consider providing pre-enrollment orientation programs and continued mentorship to better align students' expectations with the realities of the PhD process. This can improve academic success and help manage emotional and personal issues.

Future research should explore the perceptions and expectations of a larger, more diverse group of PhD students from various disciplines and cultural backgrounds. A longitudinal study following students throughout their PhD studies could provide a deeper understanding

of how expectations evolve and how different factors, such as supervisory support, intrinsic motivation, and institutional resources, affect students' long-term success and well-being.

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Perceptions of AI-Enhanced LMS in Smart Higher Education Administration

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Abstract

This study explores the perceptions of Chinese postgraduate administrators regarding the integration of artificial intelligence (AI) and Learning Management Systems (LMS) within higher education administrative functions. The research was conducted with participants enrolled in an educational administration programme in Thailand, offering a cross-cultural perspective on digital transformation in higher education. A structured questionnaire measured perceptions across domains such as policy and governance, resource allocation, training and support, data security and ethics, administrative efficiency, and institutional readiness. The results reveal widespread agreement on the necessity of institutional policies, sufficient resources, and ethical frameworks for effective AI-LMS adoption. High mean scores across these domains indicate a strong conceptual endorsement of the potential benefits of AI-driven administrative systems. However, readiness scores were significantly lower, highlighting uncertainty about current institutional capacity to implement these technologies in practice. This contrast suggests a clear gap between perceived importance and actual preparedness for integration. The findings contribute to ongoing discussions about AI in education by emphasising the need for coordinated strategies that align policy, training, and ethical considerations with institutional capabilities. These insights can guide policymakers and educational leaders seeking to implement AI-enhanced administrative practices that are both effective and ethically grounded.

Keywords: AI-enhanced LMS, higher education administration, perceptions, readiness, policy, ethics

Introduction

Artificial intelligence (AI) and Learning Management Systems (LMS) are pivotal in transforming higher education into smart, data-driven environments. Their integration supports personalisation, enhances administrative efficiency, and facilitates adaptive learning systems. Chinese higher education has prioritised centralised digital campuses and AI-powered analytics, contrasting with European models emphasising openness and inclusivity (Wu, 2024). Understanding administrative perceptions of AI-enhanced LMS is vital, as these perspectives influence policy, funding, and readiness for adoption. This study examines perceptions of Chinese master's students studying educational administration in Thailand, providing insights into future cross-cultural strategies for smart education.

Despite significant advances in AI and LMS, research predominantly examines student or faculty experiences, leaving administrative viewpoints underexplored. Administrators play a crucial role in aligning technological innovations with institutional policies and national strategies, yet little is known about their readiness to integrate AI-enhanced LMS into administrative frameworks. This knowledge gap risks implementation inefficiencies and underutilisation of advanced educational technologies.

Exploring administrators ’perceptions informs institutional planning and professional development, ensuring smoother technology adoption. Findings may guide policymakers in harmonising AI strategies with higher education reforms and help universities balance innovation with ethical considerations such as data security and governance.

The study objectives are as follows:

1. To assess perceptions of AI-enhanced LMS among Chinese postgraduate administrators.
2. To examine perceived benefits, ease of use, and readiness for AI-LMS integration.
3. To identify managerial concerns, including policy, resources, training, and ethics.

Literature Review

Artificial intelligence (AI) has significantly expanded in higher education, influencing how personal and collaborative learning environments are structured. Msambwa, Wen, and Daniel (2025) examined 148 articles published between 2021 and 2024 to explore AI’s role in supporting personalisation, assessment, and learner engagement. Their systematic review found that AI tools enhance motivation, foster collaborative opportunities, and provide adaptive scaffolding for performance improvement. However, the study also underscored ethical challenges, including privacy concerns and algorithmic bias, advocating for a balance between AI-driven and human interactions in educational contexts. These ethical considerations set the stage for broader discussions about implementation strategies across diverse educational environments.

Expanding on implementation strategies, Catherin, Vettriselvan, Mathur, Regins, and Velmurugan (2025) explored the integration of AI and learning analytics in distance learning programs. Their research highlighted the potential of adaptive systems and intelligent tutoring to identify learning gaps and personalise instruction. Importantly, they emphasised alignment between technological tools and institutional goals, stressing faculty training and robust privacy measures. Case studies demonstrated improved student performance and retention when AI and analytics were strategically embedded, reinforcing Msambwa et al.’s (2025) conclusion that AI requires both technical and ethical frameworks to be effective.

Building on the theme of adoption factors, Baig and Yadegaridehkordi (2025) analysed continuous usage and satisfaction with generative AI (GenAI) tools among academic staff. Using models such as UTAUT and ECM, their survey identified ethical considerations, confirmation, and effort expectancy as positive predictors of satisfaction, while performance expectancy primarily influenced intention to use. Notably, privacy and security factors emerged as crucial determinants for sustained usage. This finding resonates with Catherin et al. (2025), who similarly highlighted the importance of aligning AI adoption with institutional trust and user confidence.

Parallel to these developments, Venice, Vettriselvan, Rajesh, Suresh, and Abirami (2025) examined cloud technology’s transformative role in higher education, focusing on AI-driven analytics and adaptive learning systems integrated within LMS frameworks. Through case studies of initiatives like Khan Academy and Purdue University’s predictive analytics, the study demonstrated personalised and inclusive learning outcomes while recognising

persistent challenges related to privacy and the digital divide. Their emphasis on cloud-enabled adaptability connects closely to Baig and Yadegaridehkordi's (2025) insights on scalability and institutional readiness.

The ethical and governance dimensions of AI adoption are explored by Awashreh (2025), who identified risks such as bias, over-reliance on technology, and inequality in AI-driven education. The study advocated for accountability mechanisms and digital literacy initiatives to safeguard ethical implementation. This argument complements the privacy concerns raised by Venice et al. (2025) and anticipates future directions where ethical frameworks are integral to AI-LMS deployments.

Focusing on adaptive learning, Das, Mutsuddi, and Ray (2025) investigated how AI personalises educational experiences through data-driven adjustments to individual learner needs. Their chapter described benefits such as flexible scheduling, immediate feedback, and accelerated student progress. This aligns with Msambwa et al. (2025) and Venice et al. (2025), both of whom highlighted similar advantages in personalisation and adaptive pathways across LMS environments.

In distance learning contexts, Arockia, Vettriselvan, Rajesh, Velmurugan, and Cheelo (2025) demonstrated how AI and learning analytics enhance interactivity and support timely interventions for diverse learners. Their findings showed improvements in engagement and inclusivity, echoing Catherin et al.'s (2025) emphasis on responsive and data-informed teaching strategies.

Sajja, Sermet, and Demir (2025) presented a case study of conversational AI integrated with LMS platforms, illustrating enhanced student engagement in environmental sciences. By leveraging advanced document parsing and contextual question-answering capabilities, their Educational AI Hub addressed complex data interactions. This practical application bridges theoretical insights from Das et al. (2025) and Arockia et al. (2025), demonstrating real-world benefits of AI-supported LMS.

The broader digital transformation of higher education was examined by Mexhuani (2025), who synthesised TAM and DOI frameworks to assess adaptive learning and online platform adoption. Their research identified opportunities for equity and collaboration, but also noted barriers such as faculty resistance and privacy concerns. This complements Awashreh's (2025) call for ethical frameworks, showing that strategic planning and inclusive policy are necessary for sustained adoption of AI-enhanced LMS.

Finally, Filiz, Kaya, and Adiguzel (2025) explored teacher readiness for AI integration, identifying enthusiasm for efficiency and interactivity but also challenges related to curriculum alignment and cultural adaptation. Their findings extend discussions by Mexhuani (2025) and Baig and Yadegaridehkordi (2025), suggesting that professional development and contextual sensitivity are critical to overcoming adoption barriers in both K-12 and higher education settings.

Research consistently highlights AI's transformative role in higher education. Msambwa, Wen, and Daniel (2025) found AI enhances personalisation, assessments, and collaboration but raises ethical concerns, particularly privacy and bias. These insights establish the dual promise and challenge of AI adoption.

Catherin et al. (2025) extended this perspective to distance learning, demonstrating that AI and learning analytics improve engagement and retention when aligned with institutional goals. Their findings stress the importance of systematic integration and faculty training, a theme echoed across subsequent studies.

Baig and Yadegaridehkordi (2025) examined generative AI (GenAI) usage, identifying ethical considerations and security as key to sustained adoption. Their results suggest that trust and regulatory frameworks must accompany technical implementation—an observation mirrored in Venice et al.'s (2025) analysis of cloud-based adaptive learning systems.

Ethical frameworks emerge repeatedly. Awashreh (2025) underscored risks such as inequality, over-reliance on automation, and bias, recommending accountability mechanisms and digital literacy initiatives. Similar themes appear in Mexhuani (2025), who combined TAM and DOI to reveal that while adaptive tools promote equity and collaboration, barriers such as faculty resistance remain significant.

Several studies highlight adaptive and personalised learning. Das, Mutsuddi, and Ray (2025) described AI's potential to tailor instruction through real-time analytics, a trend reinforced by Arockia et al. (2025) in their exploration of AI-driven learning analytics for distance education. Sajja, Sermet, and Demir (2025) provided a practical case of conversational AI integrated with LMS, illustrating improved engagement and complex data handling.

Together, these studies show that AI-LMS integration offers efficiency and personalisation but depends on institutional readiness, policy alignment, and ethical safeguards. However, few studies focus specifically on administrators—those who oversee resource allocation and policy development—creating a gap this study addresses.

Methodology

Research Design

A descriptive quantitative design was employed to examine perceptions of AI-enhanced LMS among Chinese postgraduate administrators. This design was selected to capture measurable attitudes across domains including usefulness, ease of use, policy alignment, resource allocation, training, ethics, and readiness.

Participants

The participants were 16 Chinese master's students enrolled in an educational administration programme at a Thai university. All participants had prior administrative experience within Chinese higher education, which allowed them to provide informed perspectives on the integration of AI and LMS into administrative functions. Their enrolment in an international programme provided an additional comparative lens between Chinese and global approaches to digital transformation.

Sampling

A purposive sampling technique was applied to ensure the inclusion of individuals with direct administrative experience in higher education and current exposure to international education practices. This approach allowed the study to focus on participants who could evaluate AI-LMS integration from both domestic and international standpoints.

Instrument

A structured questionnaire was developed based on prior studies addressing AI and LMS adoption in educational settings. The instrument assessed five core domains:

- Policy and Governance (e.g., the necessity for institutional policies, alignment with national strategies)
- Resource Allocation (e.g., adequacy of funding, infrastructure support)
- Training and Support (e.g., need for specific training, continuous professional development)
- Data Security and Ethics (e.g., privacy protection, ethical frameworks)
- Administrative Efficiency and Readiness (e.g., impact on efficiency, institutional preparedness)

Each item was measured using a five-point Likert scale ranging from 1 (strongly disagree) to 5 (strongly agree). Chinese translations were included to ensure clarity and accuracy of

responses for participants. The questionnaire underwent content validation through expert review by specialists in educational technology and administration.

Data Collection

The questionnaire was distributed electronically using secure university channels. Participants were invited to complete the survey voluntarily and anonymously, allowing them to respond candidly regarding their perceptions of AI-LMS integration in administrative contexts.

Data Analysis

The collected data were analysed using descriptive statistics, including means and standard deviations, to identify overall trends and levels of agreement across the measured domains. Comparative analysis was also planned to explore variations between constructs, offering insight into areas such as policy readiness, resource allocation, and ethical concerns.

Limitations

The study was limited by its small sample size, which restricted the generalisability of findings. Nonetheless, it provided preliminary insights into administrative perceptions of AI-enhanced LMS adoption in a cross-cultural context. Recommendations for future research included expanding the participant pool across multiple institutions and regions.

Results and Discussion

The table below presents the mean and standard deviation scores for each questionnaire statement. These values provide insight into participant perceptions regarding policy, resources, training, ethics, administrative efficiency, and readiness for AI-enhanced LMS integration.

Questionnaire Statement	Mean	Standard Deviation
University policies are needed to guide AI, and LMS integration in administration.	4.81	0.4
Clear regulations must govern data generated by these technologies.	4.81	0.4
Adoption of these technologies should align with national higher education strategies.	4.75	0.45
Adequate funding is essential for successful integration of these technologies.	4.69	0.48
Infrastructure development is required to ensure reliable technology use.	4.81	0.4
Administrators need specific training to manage AI, and LMS, effectively.	4.81	0.4
Ongoing professional development is important for sustaining effective use.	4.75	0.45
Strong security measures are required to protect institutional and student data.	4.88	0.34
Ethical guidelines must ensure responsible use of these technologies.	4.81	0.4
Integration of AI, LMS, and IoT improves university administrative efficiency.	4.81	0.4
My institution is ready to adopt AI-enhanced LMS for administrative functions.	3.38	0.62

The statistical analysis of responses to the questionnaire on AI-enhanced LMS integration reveals several significant patterns. Firstly, the results show consistently high mean values (ranging between 4.69 and 4.88) across most domains, including policy and governance, resource allocation, training and support, data security and ethics, and administrative efficiency. These figures demonstrate a widespread consensus among participants about the importance and perceived benefits of integrating AI with LMS platforms in higher education administration. The low standard deviations, which generally fall below 0.5, indicate minimal variability in responses and highlight a strong alignment in participants' views. This suggests that the respondents, who were Chinese postgraduate administrators studying in Thailand, hold similar opinions about the necessity of institutional policies, adequate resources, ethical safeguards, and professional development as prerequisites for successful AI-LMS integration. Despite this generally positive perception, one notable exception emerges in the readiness dimension, where the mean score drops significantly to 3.38. This score suggests a more cautious stance regarding the immediate capacity of their institutions to adopt AI-enhanced LMS solutions. Such a discrepancy between perceived importance and readiness may reflect structural or resource-related constraints currently faced by higher education institutions in China.

The findings from this analysis align with existing literature that emphasises the dual promise and challenges associated with AI adoption in educational contexts. Studies such as those by Msambwa et al. (2025) and Catherin et al. (2025) highlight how AI tools within LMS frameworks can significantly improve personalisation, learner engagement, and administrative efficiency, provided that institutions implement supportive policies and adequate training mechanisms. The high mean scores for policy and governance in this study reflect similar conclusions, reinforcing the understanding that administrators recognise the critical role of structured institutional frameworks in successful AI adoption. The prominence of ethical considerations and data security in participant responses also mirrors global concerns raised by Awashreh (2025) and Venice et al. (2025), who argue for comprehensive regulatory measures to prevent algorithmic bias and safeguard sensitive information.

Interestingly, the pronounced gap between the high ratings for enabling factors (policy, resources, ethics) and the lower rating for overall readiness provides an important insight into the adoption landscape. This gap suggests that, although administrators are conceptually supportive of AI-LMS integration and acknowledge its potential benefits, they do not perceive their institutions as fully prepared for immediate implementation. Factors contributing to this readiness gap may include insufficient infrastructure, lack of funding, or limited exposure to AI-driven platforms in current administrative practice. Mexhuani (2025) highlights similar institutional hesitancy, noting that technological enthusiasm often precedes practical readiness, necessitating phased adoption strategies.

The strong emphasis on ethical frameworks in responses aligns with calls in the literature for more robust oversight and training in digital literacy among educational administrators. As AI adoption expands, concerns about equity, privacy, and algorithmic transparency must be addressed to maintain trust in institutional processes. The respondents' recognition of ethical imperatives, coupled with their lower confidence in readiness, suggests that policy development should prioritise not only technical integration but also cultural and ethical preparedness. Training programmes must therefore incorporate modules on responsible AI use, governance mechanisms, and cross-cultural considerations, particularly in transnational education contexts such as the one examined here.

Institutions should establish clear, comprehensive policies governing AI-enhanced LMS adoption that address both technical and ethical dimensions. These frameworks must include specific guidelines for data usage, algorithmic transparency, and decision-making processes.

Given the consistently high ratings for policy necessity among administrators, institutions should prioritize creating structured governance mechanisms before technical implementation begins. Administrative leaders should ensure that AI-LMS integration aligns with broader national higher education strategies and institutional missions. This alignment requires ongoing dialogue between institutional administrators, government education agencies, and technology providers to maintain coherence between local implementation and national educational priorities. For institutions operating in transnational education contexts, policies must account for different cultural approaches to technology adoption, privacy expectations, and educational governance. The study's focus on Chinese administrators in Thai institutions highlights the need for culturally sensitive implementation strategies.

The high rating for infrastructure necessity indicates that institutions must ensure robust technological foundations before implementing AI-enhanced systems. This includes upgrading network capacity, ensuring reliable power systems, and establishing redundant data storage and backup systems. Given the recognition that adequate funding is essential, institutions should develop multi-year funding strategies that account for initial implementation costs, ongoing maintenance, licensing fees, and continuous system updates. Phased implementation allows for better budget management and risk mitigation. Smaller institutions should consider consortium arrangements or shared services models to access AI-enhanced LMS capabilities that might otherwise be financially prohibitive. This approach can help address resource constraints while maintaining quality standards.

The unanimous recognition of training necessity requires institutions to implement mandatory, comprehensive training programs for all administrative staff involved in AI-LMS management. These programs should cover technical competencies, ethical considerations, and decision-making frameworks. Professional development should be ongoing rather than one-time training events. Institutions should create structured pathways for administrators to maintain current knowledge of AI developments, regulatory changes, and best practices in educational technology management. Training programs should be differentiated based on administrative roles, with specialized modules for data privacy officers, academic administrators, student services personnel, and technical support staff. Generic training approaches are insufficient for complex AI-LMS implementations.

The highest rating for security measures demands that institutions establish comprehensive data protection protocols that exceed minimum regulatory requirements. This includes encryption standards, access controls, audit trails, and regular security assessments. Institutions must establish ethics committees or review boards specifically focused on AI applications in education. These bodies should evaluate algorithmic fairness, potential bias, and the educational impact of AI-driven decisions on student outcomes. Clear regulations governing data use require institutions to create accessible, understandable policies that explain how student and institutional data is collected, processed, stored, and potentially shared. These policies should include opt-out provisions where appropriate.

The significant gap between perceived importance of AI-LMS integration and institutional readiness necessitates thorough institutional assessments before implementation. These assessments should evaluate technical infrastructure, human resources, financial capacity, and organizational culture. Institutions should begin with limited pilot programs that allow for testing, refinement, and gradual scaling. This approach can help build confidence and competency while identifying specific institutional challenges and requirements. The readiness gap suggests resistance to change or perceived barriers that require systematic change management approaches. This includes stakeholder engagement, communication strategies, and addressing specific concerns about AI implementation.

For institutions with diverse cultural populations or international operations, AI-LMS implementation must account for different cultural attitudes toward technology, privacy, and

educational authority. One-size-fits-all approaches are likely to encounter resistance. Administrative staff should receive training on cultural dimensions of technology adoption, including different expectations for privacy, autonomy, and institutional authority in educational contexts.

Institutions should establish metrics and monitoring systems to evaluate the effectiveness of AI-LMS integration on administrative efficiency, student outcomes, and institutional goals. Regular assessment ensures that implementations deliver promised benefits. Systematic feedback collection from administrators, faculty, and students is essential for continuous improvement. These mechanisms should capture both quantitative performance data and qualitative user experience insights. AI and LMS technologies evolve rapidly, requiring institutions to plan for regular system updates, platform migrations, and integration with emerging technologies. Strategic planning should anticipate rather than react to technological changes.

Institutions should conduct thorough risk assessments that address technical failures, data breaches, vendor dependency, and potential negative educational outcomes. These assessments should inform contingency planning and insurance requirements. Over-reliance on AI-enhanced systems creates institutional vulnerability. Institutions should maintain alternative processes and systems that can function if AI-LMS platforms experience failures or require discontinuation. Clear contracts, service level agreements, and exit strategies are essential when working with AI-LMS vendors. Institutions should avoid vendor lock-in situations that could compromise long-term flexibility and cost management.

Successful AI-LMS implementation requires visible, sustained commitment from institutional leadership. This includes both financial investment and cultural messaging about the importance of technological innovation in educational administration. The gap between perceived importance and readiness suggests that institutional culture may not fully support technological innovation. Leadership should actively work to create environments that encourage experimentation, learning from failures, and continuous adaptation. Rather than relying entirely on external vendors and consultants, institutions should develop internal expertise in AI applications, data analytics, and educational technology. This capability is essential for making informed decisions and maintaining control over institutional systems.

Conclusion and Suggestions

This analysis provides valuable insights into administrators' perceptions of AI-enhanced LMS adoption in higher education. The results highlight strong consensus on the necessity of institutional support structures, including clear policies, sufficient resource allocation, targeted training, and robust ethical safeguards. However, a significant gap remains between recognition of these enabling factors and perceptions of institutional readiness. Bridging this gap will require coordinated strategies that align national higher education policies with institutional capabilities, phased implementation plans, and comprehensive professional development programmes tailored to administrators' needs. Addressing this readiness gap is essential for ensuring that the transformative potential of AI in higher education can be realised in practice rather than remaining aspirational. The findings underscore the need for multi-level collaboration between policymakers, institutional leaders, and technology developers to achieve sustainable and ethically grounded AI-LMS integration.

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Students Perceptions of Online Learning Platforms: Impact on Education and Learning Accessibility in China

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Abstract

This study investigates the experiences of 120 university students in China using Xueersi Online School, with a focus on key factors such as ease of use, personalized learning, course effectiveness, and affordability. A structured questionnaire was distributed, covering six dimensions: basic information, online learning habits, perceived ease of use, perceived usefulness, behavioral intentions, and challenges and suggestions. The results indicate that students generally find the platform user-friendly and highly value its AI-driven personalized learning features. Additionally, the platform is perceived as useful for improving learning efficiency, particularly in structured subjects. However, the study highlights a significant urban-rural gap in access to online learning due to network and device limitations in rural areas. Affordability concerns also emerged, with students from lower-income backgrounds finding the platform's courses expensive. The findings suggest that while Xueersi Online School is effective in providing a personalized and efficient learning experience, addressing accessibility and cost issues will be crucial to making the platform more inclusive and equitable for all students.

Keywords: Online learning, education accessibility, Xueersi Online School, digital education, Double Reduction Policy, AI in education

Introduction

The online learning industry in China has witnessed rapid growth, driven by the COVID-19 pandemic and the Chinese government's "Double Reduction Policy." This policy aims to reduce excessive academic burdens on students and regulate the after-school tutoring industry. As a result, online education platforms such as Xueersi Online School have shifted their focus from academic tutoring to quality education and vocational skills training.

With a market size exceeding 500 billion RMB, the industry has embraced technological innovations, including artificial intelligence (AI) and big data, to provide personalized learning experiences. However, challenges remain, including the urban-rural education gap, low course completion rates, and concerns about educational equity. This study explores how Xueersi Online School has adapted to these challenges and evaluates its effectiveness in meeting students' learning needs.

This study holds significant value in understanding the role of Xueersi Online School in shaping the landscape of online education in China, particularly in the context of addressing regional disparities and adapting to educational reforms. First, the research aims to analyze how Xueersi Online School addresses the learning needs of students from different regions,

with a particular focus on students in rural areas. By examining accessibility challenges, such as network and device limitations, the study sheds light on the digital divide that may hinder the participation of rural students in online learning, ultimately providing insights on how to bridge these gaps and ensure equitable access to quality education.

Second, the study aims to evaluate the effectiveness of AI-powered personalized teaching in enhancing students' learning efficiency. With the increasing adoption of AI in education, understanding how personalized learning tools impact student outcomes is crucial for optimizing online education platforms. This research offers insights into the benefits and challenges of AI-driven learning, providing valuable implications for future educational practices that aim to cater to diverse student needs and promote individualized learning paths.

Finally, this study seeks to assess the platform's adaptability to the "Double Reduction Policy" and its contributions to quality education. The Double Reduction Policy, which aims to reduce the academic burden on students, is a significant reform in China's educational landscape. By evaluating how Xueersi Online School aligns with this policy, the research contributes to a deeper understanding of how online education platforms can support educational reforms and contribute to fostering quality, balanced learning environments for students across the country. The significance of this research lies in its potential to inform policymakers, educators, and developers on improving online education platforms like Xueersi Online School, ensuring they are accessible, effective, and aligned with the evolving educational needs of students in China.

Literature Review

China has recently unveiled a new educational blueprint aimed at building a robust education system by 2035 to support the nation's modernization and national rejuvenation goals. The 2024-2035 master plan, jointly issued by the Communist Party of China (CPC) Central Committee and the State Council, envisions a strong education system based on socialism with Chinese characteristics. This system will be characterized by powerful ideological leadership, scientific and technological underpinnings, talent competitiveness, social synergy, and international influence (Ministry of Education of the People's Republic of China, 2025). The development of such an education system has been a long-standing aspiration for China, with a targeted timeline for achieving this vision. By 2027, a high-quality education system is expected to be initially established, with the independent cultivation of talent significantly improved. By 2035, China intends to have a fully developed education system that ensures accessibility and quality of basic education among the best in the world, thereby achieving overall educational modernization.

The impact of the COVID-19 pandemic has accelerated the transition to online education globally, including in China. The pandemic forced many countries, including China, to shift from traditional co-located learning environments to online "distance learning from home" systems. Central to this transition was the increased use of distance communication tools and live streaming platforms for education. Chen et al. (2021) conducted a mixed-methods study on the experiences of live streaming-based education during the pandemic, focusing on Chinese higher education. Their study included semi-structured interviews with 30 students and 7 instructors across various disciplines, along with a large-scale survey of 6,291 students and 1,160 instructors at a leading Chinese university. The findings of the study offered valuable insights into the design of online learning environments and provided recommendations for improving remote learning experiences during the pandemic. The

authors also emphasized the implications of their findings for the development of collaborative educational systems post-pandemic.

One significant trend that emerged during this period was the growth of Open Educational Resources (OER), which provided opportunities for global collaboration in education. The Opensource Opencourseware Prototype System (OOPS), a volunteer organization based in Taiwan, was established to translate open-source materials from MIT OpenCourseWare (OCW) into Chinese. Lee, Lin, and Bonk (2007) examined the formation of a collective identity within the OOPS community, guided by Etienne Wenger's Communities of Practice (COP) framework. The study identified three key factors critical to the success of the OOPS community: strong and democratic leadership, participation incentives, and opportunities for members to share experiences and challenges in an asynchronous discussion forum. These factors contributed to the growth of OOPS, though the study also pointed out challenges related to quality control, purpose, scope, and legitimate forms of participation. The findings from this research shed light on the functioning of online global educational communities within the OER movement.

In China, the development of OER has been facilitated by organizations such as China Open Resources for Education (CORE), a non-profit consortium aimed at fostering collaboration and sharing of educational resources between Chinese and international universities. Established in 2003 following a conference on MIT OpenCourseWare, CORE provides Chinese universities with free access to global OER, envisioning this collaboration as integral to the future of global education (Open Education, 2023).

The Chinese government has also played a key role in promoting OER, launching national initiatives to integrate open resources into the country's educational system. Wang and Zhao (2011) reviewed the rapid and stable development of OER in China, noting that government-backed projects and volunteer efforts have contributed significantly to the movement. Despite the successes, several challenges remain, including legal and technical issues, as well as difficulties related to hardware infrastructure. Systemic issues such as quality control, accessibility, incentive mechanisms, and timely content delivery continue to pose challenges for OER in China.

As online learning has gained prominence, discussions have emerged about its role in addressing educational equity. Guo and Wan (2022) explored the equity issues surrounding online learning in China during the COVID-19 pandemic. Their study analyzed data from the Online Learning Survey of High School Students in China and identified a digital divide that manifested in differences in equipment access, network quality, students' adaptability to online learning, and offline learning outcomes. The study concluded that while online learning has the potential to bridge educational gaps, it alone cannot eliminate achievement disparities. The promotion of educational equity requires the active involvement of various stakeholders and targeted interventions to support disadvantaged students.

Jiang et al. (2022) conducted a comprehensive investigation into the determinants affecting university students' adoption of and satisfaction with e-learning platforms during China's COVID-19 response, when nearly 19.70 million students were mandated to participate in online learning under the government's "Classes are Suspended, yet Learning is still Ongoing" initiative. Employing the Online Database Adoption and Satisfaction (ODAS) model with a sample of 1,136 students across six universities in five Chinese provinces, the study utilized Rasch modeling and structural equation modeling for analysis. The findings revealed that computer self-efficacy, intention to use e-learning platforms, perceived ease of use, and perceived usefulness significantly influenced both platform adoption and student satisfaction, with gender differences serving as a moderating factor in these relationships.

Building upon this foundation, Jiang et al. (2021) further examined student satisfaction determinants using the Technology Satisfaction Model during the pandemic period. This study surveyed 928 students from five universities across four Chinese provinces, revealing that satisfaction with online learning platforms was both directly and indirectly influenced by computer self-efficacy and the perceived ease of use and usefulness of the platforms. Notably, the research identified regional differences as moderating variables in these relationships, highlighting the importance of geographical context in online learning satisfaction.

Chen et al. (2020) approached online learning research from a user experience perspective, analyzing the transformation of social education from face-to-face to online delivery during COVID-19. The study constructed an evaluation index system by examining user reviews of seven major online education platforms before and after the pandemic outbreak, incorporating emotional analysis and hot mining technology. Using the variation coefficient method for weighting indices and comprehensive evaluation methods for analysis, the research identified significant changes in user concerns, particularly regarding access speed, reliability, video transmission technology, course management, communication features, and learning support systems. The study provided insights into platform capabilities and response levels during the pandemic while proposing improvement measures.

Zhou et al. (2022) extended the Technology Acceptance Model to investigate factors influencing learners' intention to use online education platforms in developing countries, specifically focusing on China. Through a study of 276 college students from a mainland Chinese university, the researchers tested twelve hypotheses and found support for nine of them. The study identified external variables including Online Course Design, Perceived System Quality, and Perceived Enjoyment, along with Perceived Interaction, as effective predictors of learners' intention to use educational platforms, contributing to understanding technology adoption in emerging educational contexts.

Cong (2008) provided a qualitative perspective on Chinese students' online learning experiences through a year-long study examining cultural impacts on learning attitudes, behaviors, and achievements. Using email surveys and interviews, the research explored participants' perceptions of online learning and sought recommendations for e-learning and e-teaching guidelines. The findings revealed diverse opinions regarding Chinese culture's impact on online learning, with participants identifying both positive and negative influences. The study emphasized individual differences and cultural adaptation as key factors, while the invisibility of cultural influence explained some participants' disagreement with cultural impact theories. Recommendations for educators included providing timely feedback, selecting culturally relevant content, and addressing English language difficulties faced by Chinese students.

Yao (2025) investigated factors influencing students' perceived learning impact of Massive Open Online Courses at Sichuan University of Media and Communication in China. The study examined relationships between self-efficacy, perceived usefulness, knowledge quality, service quality, satisfaction, actual use, and perceived learning impact among 500 students from the School of Broadcasting. Using confirmatory factor analysis and structural equation modeling, the research found that while self-efficacy and satisfaction hypotheses were not supported, perceived usefulness, knowledge quality, and actual use significantly predicted satisfaction, which in turn predicted perceived learning impact.

Chen et al. (2022) examined the evolution of distance education in Chinese higher education through the lens of accessibility, quality, and equity. Using document analysis of national-level policy documents and scientific articles from CNKI, the study revealed the Chinese government's positive attitude toward distance education. However, the research

identified accessibility as receiving less attention compared to quality and equity themes, with problems attributed to inadequate ICT literacy and poor internet infrastructure. The study highlighted gaps between policy directions and research focus, particularly in accessibility development and management.

Liu (2023) conducted a phenomenological study exploring the lived experiences of 25 teachers and 23 undergraduate students at Quzhou University in China to understand matches and mismatches in perceptions of e-learning advantages and problems. Through semi-structured interviews and thematic analysis, the research revealed both convergent and divergent viewpoints between educators and students regarding e-learning implementation. The study provided insights for stakeholders to reduce negative consequences and enhance e-learning quality through better understanding of different perspectives within the educational community.

Collectively, these studies demonstrate the multifaceted nature of online learning research, encompassing technological, cultural, pedagogical, and policy dimensions. The research consistently emphasizes the importance of user perception, cultural context, and system quality in determining online learning success. The findings suggest that effective online learning implementation requires consideration of diverse stakeholder perspectives, regional variations, and cultural factors, particularly in rapidly developing educational markets such as China. The educational landscape in China is undergoing significant transformations, driven by both governmental efforts and the widespread adoption of digital learning technologies. The ongoing development of OER, the transition to online learning, and efforts to address equity issues are central to China's educational modernization goals. Future research should continue to examine the evolving role of online education, the challenges associated with OER integration, and the strategies needed to ensure equitable access to quality education for all students.

Methodology

The study surveyed 120 university students in China with prior experience using Xueersi Online School. Participants were strategically selected from various regions to ensure diverse representation of the student population. The sample included both undergraduate and graduate students from a range of academic disciplines, offering a comprehensive perspective on online learning experiences.

Ethical considerations were paramount in conducting this study. Participants were fully informed about the purpose of the research, and their participation was entirely voluntary. All responses were kept confidential, and no personally identifiable information was collected. Data was collected through questionnaires, with a focus on ensuring anonymity and protecting the privacy of participants. In accordance with ethical standards, participants were provided with the option to withdraw from the study at any time without any consequences. The results were analyzed using mean scores to provide a general understanding of the participants' experiences with Xueersi Online School, ensuring that individual responses remained anonymous and aggregated for reporting purposes.

A structured questionnaire was designed to assess various aspects of participants' experiences with Xueersi Online School, covering six key dimensions: Basic Information, Online Learning Habits, Perceived Ease of Use, Perceived Usefulness, Behavioral Intentions, and Challenges and Suggestions. The Online Learning Habits section focused on the frequency of use, preferred course types, and device usage. The Perceived Ease of Use dimension explored participants' experiences with platform features, including AI assessments, interactive classrooms, and system stability. The Perceived Usefulness section

assessed evaluations of course content, learning efficiency, and problem-solving abilities. Behavioral Intentions were measured by participants' willingness to continue using the platform and recommend it to others. Lastly, the Challenges and Suggestions dimension identified issues faced by users and areas for improvement. Participants responded to each item using a 5-point Likert scale (1 = Strongly Disagree, 5 = Strongly Agree).

Results and Discussion

The results of the survey revealed key insights into students' experiences with Xueersi Online School. Frequency of use had a mean score of 3.8 (SD = 0.9), suggesting that students used the platform regularly but not excessively. Perceived Ease of Use scored a mean of 4.1 (SD = 0.8), indicating that most students found the platform user-friendly. The highest satisfaction was noted in the AI personalized learning effectiveness dimension, with a mean of 4.2 (SD = 0.7), suggesting that students appreciated the platform's AI-driven features, especially personalized assessments. Course usefulness had a mean score of 4.0 (SD = 0.9), highlighting that students felt the course content was beneficial for their learning. Willingness to continue using the platform scored a mean of 3.9 (SD = 0.8), indicating a generally positive outlook toward continued use. However, Cost-effectiveness scored lower, with a mean of 3.5 (SD = 1.0), reflecting concerns about the affordability of the platform, particularly among students from lower-income backgrounds.

Key findings from the study include that the majority of students found Xueersi Online School easy to use, with the AI-powered personalized assessments receiving the highest satisfaction scores. This suggests that students value the individualized learning experience provided by the platform. Additionally, students generally agreed that the platform improves their learning efficiency, particularly in subjects that require structured guidance. However, there was a noticeable urban-rural gap, with students in rural areas facing accessibility challenges due to issues such as limited network quality and device availability. Finally, affordability concerns were highlighted, as students from low-income backgrounds found the platform's courses relatively expensive, raising questions about its cost-effectiveness for a broader demographic. These findings emphasize the importance of addressing both technological and financial barriers to make the platform more accessible and equitable for all students.

The findings from this study provide valuable insights into the experiences of university students using Xueersi Online School, highlighting both the strengths and areas for improvement in the platform.

One of the most significant findings is the perceived ease of use of the platform, with a mean score of 4.1. This suggests that Xueersi Online School is generally user-friendly, and most students were able to navigate it without significant difficulties. The high satisfaction with AI-powered personalized learning (mean = 4.2) also indicates that students highly value the platform's ability to offer tailored educational experiences. Personalized assessments likely enhance students' learning experiences by addressing individual strengths and weaknesses, leading to more effective learning outcomes. This is especially important as personalized learning is seen as a key driver in improving student engagement and academic performance, particularly in online environments where students may otherwise feel disconnected.

The course usefulness (mean = 4.0) further underscores that students perceive the platform's content as valuable in enhancing their academic progress. This aligns with previous studies on the importance of well-structured online learning materials in fostering student engagement and learning efficiency. The platform seems to be particularly effective

in subjects requiring structured guidance, where students benefit from clear, organized content and interactive learning tools that support comprehension and retention. This suggests that Xueersi Online School is successfully meeting the needs of students who require more direction in their learning processes, contributing to improved learning efficiency.

However, while the overall feedback is positive, the study reveals some important challenges, particularly concerning the urban-rural gap. Students from rural areas reported lower accessibility due to network and device limitations. This highlights a significant digital divide that may exacerbate educational inequalities between urban and rural populations in China. Despite the country's rapid technological advancement, access to reliable internet and modern devices remains a barrier for students in less developed regions. This issue is critical, as students in rural areas may be at a disadvantage, limiting their ability to engage fully with online learning platforms like Xueersi. It points to the need for targeted interventions that improve infrastructure in rural areas to ensure equitable access to online education.

Another key finding is related to affordability concerns, with a mean score of 3.5 for cost-effectiveness. Many students from lower-income backgrounds perceived the platform's courses as expensive relative to their financial capacity. This finding underscores an important issue in the broader context of online learning, where even high-quality platforms can become inaccessible to students from disadvantaged backgrounds. The cost of online education is a critical factor that can prevent many students from benefiting from such platforms, reinforcing the importance of offering affordable or subsidized options for students who cannot afford full-price courses.

Overall, the findings suggest that Xueersi Online School excels in providing a user-friendly, effective, and personalized learning experience, but there are significant barriers related to accessibility and affordability that need to be addressed. To improve the platform's reach and effectiveness, it would be beneficial to focus on improving infrastructure in rural areas and making the platform more affordable for students from lower-income backgrounds. Addressing these challenges could contribute to making online education more inclusive and equitable, ensuring that all students, regardless of their location or financial situation, can benefit from the advantages offered by online learning platforms like Xueersi.

Based on the findings of this study examining university students' experiences with Xueersi Online School, several key recommendations emerge for various stakeholders involved in online education development and implementation. These recommendations address the identified strengths while proposing solutions for the challenges that hinder equitable access and optimal learning outcomes.

Given the high satisfaction scores for AI personalized learning effectiveness (mean = 4.2), Xueersi Online School should continue to invest in and expand its artificial intelligence capabilities. The platform should develop more sophisticated adaptive learning algorithms that can better identify individual learning patterns, provide more nuanced feedback, and offer increasingly personalized learning pathways. Additionally, incorporating predictive analytics to anticipate student difficulties before they occur could further enhance the learning experience. To address affordability concerns (mean = 3.5), the platform should develop a comprehensive pricing strategy that includes multiple tiers of access. This could involve offering basic courses at reduced rates, implementing income-based pricing models, providing scholarships or financial aid for students from low-income backgrounds, and creating partnerships with educational institutions to offer bulk discounts. Additionally, a freemium model with basic content available at no cost could help reach underserved populations. To address the urban-rural digital divide, technical improvements should focus on developing lightweight versions of the platform that function effectively with limited

internet connectivity. This includes creating offline-capable content downloads, implementing adaptive streaming technology that adjusts to network quality, and designing mobile-optimized interfaces that work efficiently on basic smartphones and tablets commonly used in rural areas. The platform should establish dedicated technical support specifically for students in rural or underserved areas, including multilingual support options, video tutorials for basic platform navigation, and partnerships with local educational institutions to provide technical assistance and device support.

Universities should leverage the platform's strengths by incorporating Xueersi Online School into blended learning models that combine online and face-to-face instruction. This approach can maximize the benefits of personalized AI-driven learning while maintaining the social interaction and hands-on learning opportunities that traditional classroom settings provide. Educational institutions should advocate for and invest in improving technological infrastructure, particularly for students in rural areas. This includes establishing computer labs with reliable internet access, implementing device lending programs, and creating partnerships with telecommunications companies to improve campus and community connectivity. Institutions should implement comprehensive digital literacy training for both students and faculty to maximize the effectiveness of online learning platforms. These programs should cover basic technical skills, online learning strategies, and effective use of AI-powered educational tools.

Government initiatives should prioritize bridging the digital divide between urban and rural areas through targeted infrastructure development. This includes expanding high-speed internet access to rural communities, subsidizing internet costs for low-income families, and investing in mobile network coverage in underserved regions. In alignment with China's 2024-2035 educational blueprint, policymakers should establish comprehensive standards for online learning platforms that ensure quality, accessibility, and equity. These standards should include requirements for multilingual support, accessibility features for students with disabilities, and affordability guidelines. Government programs should provide financial assistance to students from disadvantaged backgrounds to access quality online learning platforms. This could include voucher systems, tax incentives for educational technology purchases, and direct subsidies for online learning subscriptions. Encourage collaboration between government agencies, educational institutions, and private technology companies to develop comprehensive solutions that address both technological and financial barriers to online learning access.

Conclusion and Suggestions

This study provides valuable insights into the use of Xueersi Online School among university students in China, highlighting both the strengths and challenges associated with online learning platforms. The platform is generally well-regarded for its ease of use and personalized learning features, with AI-driven assessments receiving the highest satisfaction scores. Students also find the course content useful, contributing to improved learning efficiency, particularly in subjects that require structured guidance. However, the study also reveals significant accessibility challenges faced by students in rural areas, where limited network and device availability create barriers to effective participation. Additionally, concerns about the affordability of the platform were raised, especially among students from lower-income backgrounds. These findings suggest that while Xueersi Online School offers a high-quality learning experience, addressing issues related to access and cost is essential to ensuring that the platform is accessible to all students, regardless of their location or financial status.

Future research should conduct long-term studies to assess the sustained impact of AI-powered personalized learning on student academic outcomes, retention rates, and career success. This research should compare students who used personalized online learning platforms with those who relied primarily on traditional learning methods. Comprehensive studies should examine the specific challenges and opportunities faced by rural students in online learning environments, with particular attention to developing targeted interventions that can bridge the digital divide effectively. Research should examine the economic implications of online learning adoption, including cost-effectiveness for students, institutions, and society as a whole. This analysis should consider both direct costs (platform fees, technology) and indirect costs (time, opportunity costs). Future research should compare the effectiveness, accessibility, and affordability of different online learning platforms to identify best practices and inform platform development and policy decisions. Studies should examine whether online learning platforms like Xueersi Online School help reduce or potentially exacerbate educational inequalities between different demographic groups, socioeconomic backgrounds, and geographic regions.

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The Influence of Digital Marketing on Perceived Image and Revisit Intention Toward Agricultural Tourism Destinations in Chumphon Province, Thailand

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Abstract

This study examines the influence of digital marketing factors on the perceived image of agricultural tourism destinations and tourists' revisit intention in Chumphon Province, Thailand. A quantitative research design was employed using a structured questionnaire administered to 200 tourists who had visited agricultural tourism sites in Chumphon. The digital marketing factors investigated included social media marketing, content marketing, influencer marketing, and electronic word of mouth (e-WOM). Perceived destination image was assessed through five dimensions: quality, credibility, uniqueness, attractiveness, and sustainability. Data were analysed using descriptive statistics, Pearson's correlation, and stepwise multiple regression. The results revealed that overall digital marketing was perceived as high (M = 4.18), with e-WOM receiving the highest mean score (M = 4.28). The perceived image of Chumphon's agricultural tourism was moderate to high (M = 3.78), with attractiveness ranked highest (M = 3.91). Revisit intention was also high (M = 3.84). Stepwise regression indicated that influencer marketing (β = .398), content marketing (β = .271), and social media marketing (β = .229) significantly predicted perceived destination image (R^2 = .590). Furthermore, all five perceived image dimensions significantly predicted revisit intention (R^2 = .460), with attractiveness (β = .372) and uniqueness (β = .315) being the strongest predictors. These findings provide practical implications for destination marketers seeking to leverage digital marketing strategies to enhance the perceived image and encourage repeat visitation to agricultural tourism destinations.

Keywords: Digital Marketing, Perceived Destination Image, Revisit Intention, Agricultural Tourism, Chumphon Province

1. Introduction

Agritourism, also known as agritourism, has become a significant niche in the global tourism industry. This type of tourism offers travellers authentic experiences rooted in farming, rural culture, and local food systems. In Thailand, agricultural tourism has gained increasing recognition as a strategy for rural economic development, cultural preservation, and sustainable livelihoods. The Thai government, through the Ministry of Agriculture and Cooperatives and the Department of Tourism, has actively promoted community-based agricultural tourism as part of the national tourism development agenda (Ministry of Agriculture and Cooperatives, 2023). Chumphon Province, located in southern Thailand

along the Gulf of Thailand, is particularly well-positioned for agricultural tourism development due to its rich agricultural heritage, including fruit orchards, rubber plantations, coffee farms, and coastal fisheries.

Despite the inherent appeal of Chumphon's agricultural resources, the province faces challenges in attracting and retaining tourists compared to more established southern Thai destinations, such as Surat Thani and Krabi. Tourism statistics indicate that while Chumphon has experienced gradual growth in visitor numbers, the rate of repeat visitation remains relatively low (Department of Tourism, 2024). This suggests a gap between the destination's potential and its ability to create lasting impressions that encourage return visits. Understanding the factors that influence tourists' perception of the destination and their subsequent intention to revisit is therefore crucial for developing effective marketing strategies.

The rapid advancement of digital technologies has fundamentally transformed how destinations communicate with potential and current visitors. Digital marketing has become an indispensable tool for destination promotion, encompassing strategies such as social media marketing, content marketing, influencer marketing, and electronic word of mouth (e-WOM). These digital channels enable destinations to reach wider audiences, create engaging narratives, and build meaningful relationships with tourists (Buhalis & Law, 2008; Kaplan & Haenlein, 2010). Social media platforms, in particular, have revolutionised tourism marketing by enabling real-time information sharing, visual storytelling, and user-generated content that can significantly shape destination perceptions (Xiang & Gretzel, 2010).

Perceived destination image, defined as the sum of beliefs, ideas, and impressions that individuals hold about a destination (Crompton, 1979), plays a pivotal role in tourists' decision-making processes. Research has consistently demonstrated that favourable destination images positively influence tourist satisfaction, behavioural intentions, and revisit decisions (Chen & Tsai, 2007; Chi & Qu, 2008; Zhang et al., 2014). In the context of digital marketing, destination image can be shaped through strategically crafted digital content, influencer endorsements, user reviews, and social media engagement. However, the specific mechanisms through which different digital marketing strategies influence the perceived image of agricultural tourism destinations remain insufficiently explored.

Revisit intention, defined as a tourist's plan or willingness to return to a previously visited destination, serves as a critical indicator of destination competitiveness and long-term sustainability (Phau et al., 2010). Understanding the relationship between perceived destination image and revisit intention is essential for developing targeted marketing interventions. While previous studies have examined these relationships in the context of urban and resort tourism, limited research has focused specifically on agricultural tourism settings in developing countries.

This study aims to address these gaps by investigating the influence of digital marketing factors on the perceived image of agricultural tourism destinations and tourists' revisit intention in Chumphon Province, Thailand. Specifically, the study pursues the following objectives: (1) to assess tourists' perceptions of digital marketing strategies used for promoting agricultural tourism in Chumphon; (2) to examine the relationship between digital marketing factors and perceived destination image; and (3) to analyse the influence of perceived destination image on revisit intention. The findings are expected to provide valuable insights for destination marketers, tourism authorities, and agricultural tourism operators seeking to leverage digital marketing for sustainable destination development.

The significance of this study lies in its dual contribution to both academic knowledge and practical application. From a theoretical perspective, the study extends the application of digital marketing constructs to agricultural tourism, a growing but underresearched segment of the tourism industry. From a practical standpoint, the findings

offer evidence-based recommendations for tourism stakeholders in Chumphon Province to design and implement effective digital marketing strategies that can enhance destination competitiveness and encourage sustainable tourism growth.

2. Literature Review

2.1 Digital Marketing in Tourism

Digital marketing encompasses all marketing activities conducted through digital channels, including search engines, social media platforms, email, websites, and mobile applications (Buhalis & Law, 2008). In the tourism sector, digital marketing has become a fundamental component of destination promotion strategies, enabling organisations to reach global audiences with targeted, personalised, and interactive content. The evolution from traditional marketing to digital approaches has been driven by changing consumer behaviour, with tourists increasingly relying on online sources for travel planning, destination selection, and experience sharing (Xiang & Gretzel, 2010).

Social media marketing involves strategically using platforms such as Facebook, Instagram, TikTok, and YouTube to promote destinations and engage with tourists. These platforms facilitate visual storytelling, real-time interaction, and community building, making them particularly effective for tourism marketing (Kaplan & Haenlein, 2010; Siricharoen, 2012). Content marketing, on the other hand, focuses on creating and distributing valuable, relevant, and consistent content to attract and retain a clearly defined audience (Pulizzi, 2012; Rowley, 2008). In the tourism context, content marketing may include blog posts, destination guides, videos, and interactive experiences that provide useful information while simultaneously shaping destination perceptions.

Influencer marketing leverages individuals with significant online followings and credibility to promote destinations through authentic experiences and endorsements (Gretzel, 2018; Lou & Yuan, 2019). Tourism influencers can significantly affect destination awareness, perceived attractiveness, and travel intentions through their curated content and personal recommendations (Ong & Ito, 2019). The effectiveness of influencer marketing in tourism stems from the parasocial relationships that audiences develop with influencers, which create a sense of trust and authenticity that traditional advertising cannot easily replicate. When travel influencers share their genuine experiences at agricultural tourism destinations, their followers are more likely to perceive these destinations as desirable and accessible.

Electronic word-of-mouth (e-WOM) refers to informal communication about products or services via digital channels, such as online reviews, ratings, forums, and social media comments (Hennig-Thurau et al., 2004). In tourism, e-WOM serves as a powerful information source that shapes destination perceptions and influences travel decisions (Filieri, 2015; Tham et al., 2013). The influence of e-WOM on tourism decision-making is amplified by its perceived objectivity, as consumers tend to trust peer recommendations more than marketer-generated content. Positive e-WOM can significantly enhance a destination's reputation and attract new visitors, while negative e-WOM can deter potential tourists and damage destination image (Asan et al., 2022). In the context of agricultural tourism, e-WOM often takes the form of online reviews of farm experiences, photo-sharing on social media, and recommendations in travel forums and community groups.

2.2 Perceived Destination Image

Perceived destination image refers to the mental representation of a destination formed through cognitive and affective evaluations (Crompton, 1979). This construct has been extensively studied in tourism research due to its significant influence on tourist

behaviour, including destination selection, satisfaction, and loyalty (Chen & Tsai, 2007; Zhang et al., 2014). Destination image is typically conceptualised as a multidimensional construct encompassing various attributes that tourists evaluate when forming their impressions of a place.

Several dimensions of perceived destination image have been identified in the literature. Quality refers to the perceived standard of services, facilities, and experiences available at the destination (Zeithaml, 1988). Credibility relates to the perceived trustworthiness and reliability of destination-related information and services (Hankinson, 2004). Uniqueness captures the distinctive characteristics that differentiate a destination from its competitors (Stylidis et al., 2016). Attractiveness encompasses the overall appeal and desirability of the destination, including its natural beauty, cultural heritage, and tourism offerings (Chi & Qu, 2008). Sustainability reflects tourists' perceptions of the destination's commitment to environmental conservation, cultural preservation, and responsible tourism practices.

In the context of agricultural tourism, destination image is particularly important because it shapes tourists' expectations regarding the authenticity, educational value, and experiential quality of farm-based activities. Digital marketing strategies can play a crucial role in constructing and communicating favourable destination images by providing visual evidence, authentic testimonials, and engaging narratives that highlight the unique attributes of agricultural tourism destinations.

Research has demonstrated that the formation of destination image is influenced by both organic (e.g., personal experiences and word of mouth) and induced (e.g., advertising and promotional content) sources. In the digital era, the boundary between these two sources has become increasingly blurred, as user-generated content on social media platforms simultaneously serves as organic and induced image-forming agents. For agricultural tourism destinations, which often lack the marketing budgets of larger resort destinations, leveraging digital platforms to create and disseminate authentic imagery and experiential content represents a cost-effective approach to image building (Hankinson, 2004; Stylidis et al., 2016).

Furthermore, the multidimensional nature of destination image necessitates a comprehensive assessment framework that captures various facets of tourists' perceptions. The five dimensions employed in this study—quality, credibility, uniqueness, attractiveness, and sustainability—provide a holistic framework for understanding how visitors perceive agricultural tourism destinations. Each dimension captures a distinct aspect of the tourism experience, from tangible service quality to the more abstract perceptions of sustainability and authenticity, which are increasingly important to contemporary travellers (Chen & Tsai, 2007; Zeithaml, 1988).

2.3 Revisit Intention

Revisit intention refers to a tourist's expressed willingness or plan to return to a previously visited destination in the future (Phau et al., 2010). It is a key behavioural indicator of a destination's overall success in delivering satisfying experiences and creating emotional bonds with visitors. Research has consistently shown that perceived destination image is one of the strongest predictors of revisit intention, alongside tourist satisfaction and perceived value (Chen & Tsai, 2007; Chi & Qu, 2008; Zhang et al., 2014).

The relationship between digital marketing and revisit intention can be understood through the mediating role of perceived destination image. When digital marketing strategies effectively communicate a destination's unique attributes, enhance its perceived quality, and build credibility through authentic content and endorsements, tourists are more likely to

develop favourable images that translate into revisit intentions. This conceptualisation forms the theoretical foundation of the present study.

Previous research has identified several factors that influence revisit intention beyond destination image, including travel satisfaction, perceived value, emotional attachment, and place identity (Chi & Qu, 2008; Phau et al., 2010). However, in the context of agricultural tourism, where destinations compete not only with other agricultural sites but also with diverse leisure alternatives, the role of perceived destination image becomes particularly critical. Tourists who form favourable images of agricultural destinations are more likely to prioritise these destinations over alternatives when making future travel decisions, especially when these images are reinforced through ongoing digital engagement and positive online narratives (Asan et al., 2022).

The conceptual framework of this study posits two primary relationships: (1) the direct influence of digital marketing factors (social media marketing, content marketing, influencer marketing, and e-WOM) on perceived destination image, and (2) the direct influence of perceived destination image dimensions (quality, credibility, uniqueness, attractiveness, and sustainability) on revisit intention. This sequential model allows for a systematic examination of how digital marketing strategies shape destination perceptions and how these perceptions, in turn, influence behavioural intentions.

2.4 Research Hypotheses

Based on the literature review, the following hypotheses were formulated to guide the empirical investigation:

H1a: Social media marketing has a significant positive influence on the perceived image of agricultural tourism destinations in Chumphon Province.

H1b: Content marketing has a significant positive influence on the perceived image of agricultural tourism destinations in Chumphon Province.

H1c: Influencer marketing has a significant positive influence on the perceived image of agricultural tourism destinations in Chumphon Province.

H1d: Electronic word-of-mouth (e-WOM) has a significant positive influence on the perceived image of agricultural tourism destinations in Chumphon Province.

H2a: Perceived quality has a significant positive influence on tourists' revisit intention toward agricultural tourism destinations in Chumphon Province.

H2b: Perceived credibility has a significant positive influence on tourists' revisit intention toward agricultural tourism destinations in Chumphon Province.

H2c: Perceived uniqueness has a significant positive influence on tourists' revisit intention toward agricultural tourism destinations in Chumphon Province.

H2d: Perceived attractiveness has a significant positive influence on tourists' revisit intention toward agricultural tourism destinations in Chumphon Province.

H2e: Perceived sustainability has a significant positive influence on tourists' revisit intention toward agricultural tourism destinations in Chumphon Province.

3. Research Methodology

3.1 Research Design and Sampling

This study employed a quantitative research design, using a cross-sectional survey. The target population consisted of Thai and international tourists aged 18 or older who had visited agricultural tourism destinations in Chumphon Province. The sample size of 200 respondents was determined using Yamane's (1973) formula for finite populations, with a 95% confidence level and a 5% margin of error. This sample size aligns with the

recommendations of Krejcie and Morgan (1970) for ensuring adequate statistical power for correlation and regression analyses.

A convenience sampling technique was used to recruit participants from popular agricultural tourism sites in Chumphon Province, including fruit orchards, coffee and rubber plantations, and community-based tourism attractions. Data collection was conducted from October to December 2024, encompassing both weekday and weekend visitors to capture a representative range of tourist profiles. Respondents were approached at tourism sites and asked to complete a self-administered questionnaire. Both paper-based and digital questionnaire formats were offered to accommodate respondent preferences. Participation was voluntary, and informed consent was obtained from all respondents prior to data collection. Of the 220 questionnaires distributed, 200 complete and usable responses were retained for analysis, yielding a response rate of 90.9%.

Chumphon Province was selected as the study site due to its growing recognition as an emerging agricultural tourism destination in southern Thailand. The province is known for its diverse agricultural products, including durian, mangosteen, rambutan, coconut, coffee, and rubber, which provide the foundation for various agricultural tourism activities such as farm visits, fruit picking, agricultural learning programs, and community-based tourism experiences. Despite these natural advantages, Chumphon remains relatively underexplored in tourism research compared to neighbouring provinces, making it an ideal context for investigating the role of digital marketing in destination development.

3.2 Research Instrument

The research instrument was a structured questionnaire consisting of four main sections. The first section collected demographic information, including gender, age, marital status, education level, occupation, and monthly income. The second section assessed travel behaviour characteristics, including travel purpose, duration of stay, transportation mode, visit frequency, travel expenditure, travel companions, and information sources.

The third section measured tourists' perceptions of digital marketing factors using a five-point Likert scale (Likert, 1932) ranging from 1 (strongly disagree) to 5 (strongly agree). This section comprises four sub-dimensions: social media marketing, content marketing, influencer marketing, and electronic word of mouth (e-WOM). The fourth section measured perceived destination image across five dimensions (quality, credibility, uniqueness, attractiveness, and sustainability) and revisit intention, both using a five-point scale.

The questionnaire was developed from established scales in previous research and adapted to the context of agricultural tourism in Chumphon Province. The digital marketing scales were adapted from Kaplan and Haenlein (2010) and Hennig-Thurau et al. (2004), while the perceived destination image scales were based on Chen and Tsai (2007) and Stylidis et al. (2016). The revisit intention scale was adapted from Phau et al. (2010). All items were carefully worded to reflect the specific context of agricultural tourism experiences in Chumphon Province.

Content validity was established through expert review by three academics specialising in tourism marketing and digital marketing, who evaluated each item for clarity, relevance, and representativeness. Based on expert feedback, minor modifications were made to improve the wording and cultural appropriateness of several items. The instrument was subsequently pilot tested with 30 respondents who were not included in the final sample. Reliability analysis using Cronbach's alpha coefficient confirmed that all sections demonstrated acceptable internal consistency, with alpha values exceeding 0.75 across all dimensions, meeting the threshold recommended by Nunnally and Bernstein (1994). Specifically, the digital marketing section yielded alpha values ranging from 0.78 to 0.86,

the perceived image section from 0.76 to 0.84, and the revisit intention section achieved an alpha of 0.82.

3.3 Data Analysis

Data were analysed using both descriptive and inferential statistical techniques. Descriptive statistics, including frequency, percentage, mean, and standard deviation, were used to characterise respondents' demographic profiles, travel behaviour, perceptions of digital marketing, perceived destination image, and revisit intention. Mean scores were interpreted using the following criteria: 4.21–5.00 = strongly agree, 3.41–4.20 = agree, 2.61–3.40 = neutral, 1.81–2.60 = disagree, and 1.00–1.80 = strongly disagree.

Pearson's product-moment correlation was used to examine the relationships between digital marketing factors and perceived destination image, and between perceived image dimensions and revisit intention. Stepwise multiple regression analysis was employed to identify the significant predictors among the digital marketing factors that influence perceived destination image, and among the perceived image dimensions that influence revisit intention. The assumptions of regression analysis, including linearity, normality, multicollinearity, and independence of residuals, were assessed using the Durbin-Watson statistic and variance inflation factor (VIF). Statistical significance was set at $p < .05$ (Hair et al., 2019).

4. Results and Discussion

4.1 Demographic Profile of Respondents

Table 1 presents the demographic characteristics of the 200 respondents who participated in the study. The majority of respondents were female (55.0%), aged 31-40 years (30.0%), married (55.0%), and holding a bachelor's degree (60.0%). The largest occupational group was company employees (45.0%), followed by business owners (22.5%). In terms of monthly income, the highest proportion was earned between 15,001 and 30,000 Thai Baht (40.0%).

Table 1 Demographic Characteristics of Respondents (n = 200)

Demographic Variable	Frequency	Percentage
Gender		
Female	110	55.0
Male	90	45.0
Age (years)		
20–30	55	27.5
31–40	60	30.0
41–50	50	25.0
51–59	25	12.5
60 and above	10	5.0
Marital Status		
Single	80	40.0
Married	110	55.0
Divorced/Widowed	10	5.0
Education Level		
Below a bachelor's degree	30	15.0
Bachelor's degree	120	60.0
Master's degree	40	20.0

Demographic Variable	Frequency	Percentage
Doctoral degree	10	5.0
Occupation		
Company employee	90	45.0
Business owner	45	22.5
Government officer/Teacher	30	15.0
Student	25	12.5
Farmer	10	5.0
Monthly Income (Baht)		
Less than 15,000	45	22.5
15,001–30,000	80	40.0
30,001–50,000	55	27.5
More than 50,000	20	10.0

4.2 Travel Behaviour Characteristics

The travel behaviour characteristics of respondents are presented in Table 2. The most frequently cited purpose of visiting agricultural tourism destinations in Chumphon was relaxation (40.0%), followed by agricultural learning (15.0%) and community culture experience (12.5%). The majority of respondents stayed for 2–3 days (55.0%) and travelled by private car (60.0%). Half of the respondents (50.0%) were first-time visitors, while 30.0% had visited once or twice before. The most common travel expenditure range was 3,001–5,000 Baht (35.0%), and the most frequent travel companions were family members (30.0%). Notably, online media was the primary information source for respondents (41.5%), followed by word of mouth (24.5%) and government/tourism offices (15.5%).

Table 2 Travel Behaviour Characteristics of Respondents (n = 200)

Travel Behavior	Frequency	Percentage
Travel Purpose		
Relaxation	80	40.0
Agricultural learning	30	15.0
Community culture experience	25	12.5
Shopping for local products	25	12.5
Health food and wellness	20	10.0
Others	20	10.0
Duration of Stay		
2–3 days	110	55.0
4–6 days	60	30.0
7 days or more	30	15.0
Transportation Mode		
Private car	120	60.0
Airplane	35	17.5
Bus	25	12.5
Train	15	7.5
Rental vehicle	5	2.5
Visit Frequency		
First time	100	50.0
1–2 times	60	30.0
3–5 times	30	15.0

Travel Behavior	Frequency	Percentage
More than 5 times	10	5.0
Travel Expenditure (Baht)		
3,000 or less	30	15.0
3,001–5,000	70	35.0
5,001–7,000	50	25.0
7,001–10,000	30	15.0
More than 10,000	20	10.0
Travel Companions		
Family	60	30.0
Friends	50	25.0
Couple	40	20.0
Tour group	30	15.0
Alone	20	10.0
Information Sources		
Online media	83	41.5
Word of mouth	49	24.5
Government/tourism offices	31	15.5
Direct experience	19	9.5
Mass media	18	9.0

4.3 Perceptions of Digital Marketing Factors

Table 3 presents the mean scores and standard deviations for tourists' perceptions of factors related to digital marketing in agricultural tourism in Chumphon Province. The overall perception of digital marketing was high (M = 4.18, SD = 0.546). Among the four digital marketing dimensions, e-WOM received the highest mean score (M = 4.28, SD = 0.525), reaching the "strongly agree" level, followed by content marketing (M = 4.21, SD = 0.533), which also reached the "strongly agree" level. Influencer marketing (M = 4.13, SD = 0.563) and social media marketing (M = 4.11, SD = 0.563) were both rated at the "agree" level.

These findings suggest that tourists place considerable importance on peer recommendations and user-generated content (e-WOM) when forming perceptions of agricultural tourism destinations. The high rating of content marketing further indicates that informative and engaging digital content effectively communicates the value of Chumphon's agricultural tourism offerings. These results are consistent with previous research highlighting the influential role of e-WOM in shaping tourism decisions (Filieri, 2015; Tham et al., 2013) and the effectiveness of content marketing in destination promotion (Pulizzi, 2012; Rowley, 2008).

Table 3 Mean Scores and Standard Deviations of Digital Marketing Factors

Digital Marketing Factor	Mean	SD	Interpretation	Rank
Social Media Marketing	4.11	0.563	Agree	4
Content Marketing	4.21	0.533	Strongly Agree	2
Influencer Marketing	4.13	0.563	Agree	3
e-WOM	4.28	0.525	Strongly Agree	1
Overall	**4.18**	**0.546**	**Agree**	

4.4 Perceived Destination Image

Table 4 presents the descriptive statistics for tourists' perceived image of agricultural tourism destinations in Chumphon Province. The overall perceived image was moderate to high (M = 3.78, SD = 0.698). Among the five image dimensions, attractiveness received the highest mean score (M = 3.91, SD = 0.663), followed by uniqueness (M = 3.82, SD = 0.686), credibility (M = 3.75, SD = 0.703), sustainability (M = 3.74, SD = 0.700), and quality (M = 3.66, SD = 0.736).

The relatively high score for attractiveness suggests that tourists find Chumphon's agricultural tourism destinations visually appealing and experientially engaging. The uniqueness dimension also scored notably, indicating that tourists recognise the distinctive characteristics of Chumphon's agricultural offerings. However, the lower scores for quality and sustainability suggest areas for improvement, particularly in enhancing service standards and communicating sustainability initiatives more effectively through digital channels.

Table 4 Mean Scores and Standard Deviations of Perceived Destination Image Dimensions

Image Dimension	Mean	SD	Interpretation	Rank
Quality	3.66	0.736	Agree	5
Credibility	3.75	0.703	Agree	3
Uniqueness	3.82	0.686	Agree	2
Attractiveness	3.91	0.663	Agree	1
Sustainability	3.74	0.700	Agree	4
Overall	**3.78**	**0.698**	**Agree**	

4.5 Revisit Intention

Table 5 displays the mean scores for tourists' revisit intention toward agricultural tourism destinations in Chumphon Province. The overall revisit intention was high (M = 3.84, SD = 0.691). Among the individual items, the intention to recommend the destination to others received the highest score (M = 3.95), followed by the intention to return in the future (M = 3.88), the intention to revisit (M = 3.82), and the intention to extend the duration of stay (M = 3.70).

The high recommendation intention is particularly noteworthy, as it suggests that tourists visiting Chumphon's agricultural destinations are willing to serve as advocates, thereby further strengthening e-WOM effects. This willingness to recommend aligns with the strong e-WOM ratings observed in the digital marketing assessment, creating a positive feedback loop where satisfied visitors generate organic digital content that attracts new visitors. The somewhat lower score for extending the duration of stay may indicate a need for developing more diverse activities and experiences that encourage longer visits. Tourism operators could address this by creating multi-day agricultural experience packages that combine farm visits, cooking classes, cultural activities, and nature-based experiences to encourage extended stays.

Table 5 Mean Scores and Standard Deviations of Revisit Intention Items

Revisit Intention Item	Mean	SD	Rank
Intention to revisit	3.82	0.691	3
Intention to extend the duration of stay	3.70	0.691	4
Intention to recommend to others	3.95	0.691	1
Intention to return in the future	3.88	0.691	2
Overall	**3.84**	**0.691**	

4.6 Correlation Between Digital Marketing and Perceived Image

Pearson's correlation analysis was conducted to examine the relationships between the four digital marketing factors and perceived destination image. As shown in Table 6, all four digital marketing factors demonstrated statistically significant positive correlations with perceived destination image ($p < .01$). Content marketing exhibited the strongest correlation ($r = .592$), followed by e-WOM ($r = .480$), influencer marketing ($r = .360$), and social media marketing ($r = .354$). These results indicate that all digital marketing strategies investigated in this study are positively associated with tourists' perceived image of Chumphon's agricultural tourism destinations, with content marketing showing the most substantial relationship.

Table 6 Pearson Correlation Between Digital Marketing Factors and Perceived Destination Image

Digital Marketing Factor	r	p-value
Social Media Marketing	.354**	**.000**
Content Marketing	.592**	**.000**
Influencer Marketing	.360**	**.000**
e-WOM	.480**	**.000**

**** p < .01**

4.7 Stepwise Regression: Digital Marketing Predicting Perceived Image

Stepwise multiple regression. An analysis was performed to determine which digital marketing factors significantly predict perceived destination image. The results, presented in Table 7, show that three of the four digital marketing factors entered the regression model: influencer marketing, content marketing, and social media marketing. The model accounted for 59.0% of the variance in perceived destination image ($R^2 = .590$, $F = 45.002$, $p < .001$). The Durbin-Watson statistic of 1.889 indicated no significant autocorrelation in the residuals.

Influencer marketing emerged as the strongest predictor ($\beta = .398$, $t = 6.214$, $p < .001$), followed by content marketing ($\beta = .271$, $t = 4.389$, $p < .001$) and social media marketing ($\beta = .229$, $t = 4.687$, $p < .001$). Notably, e-WOM was excluded from the regression model, suggesting that while it has a significant bivariate correlation with perceived image, its predictive contribution becomes redundant when the other three factors are controlled for. This finding is particularly interesting, as it indicates that the effect of e-WOM on perceived image may be mediated by or overlap with other digital marketing strategies.

The prominent role of influencer marketing as the strongest predictor aligns with recent literature emphasising the growing impact of social media influencers on tourism perceptions and behaviours (Gretzel, 2018; Lou & Yuan, 2019; Ong & Ito, 2019).

Influencers' ability to provide authentic, experiential content about agricultural tourism destinations appears to be particularly effective in shaping destination images. The significant contribution of content marketing confirms the importance of creating high-quality, informative digital content that showcases the unique attributes of agricultural tourism destinations (Pulizzi, 2012; Rowley, 2008).

The significant predictive role of social media marketing, though with a smaller beta coefficient, highlights the continued relevance of social media platforms as channels for destination image formation. Social media platforms provide the infrastructure for distributing and consuming influencer and user-generated content, creating a synergistic relationship among the three significant digital marketing predictors. The exclusion of e-WOM from the regression model does not diminish its importance as a digital marketing tool; rather, it suggests that e-WOM's influence on perceived image operates indirectly through its integration with social media, content, and influencer marketing. This interpretation is supported by the significant bivariate correlation between e-WOM and perceived image ($r = .480$), indicating a meaningful relationship that is accounted for by the shared variance among the predictors.

The collective explanatory power of the three digital marketing predictors ($R^2 = .590$) is noteworthy, suggesting that digital marketing factors account for a substantial proportion of the variance in perceived destination image. This finding has important implications for destination marketing organisations, as it demonstrates the tangible impact of strategic digital marketing investments on tourists' perceptions of agricultural tourism destinations. For Chumphon Province, which is still in the early stages of tourism development compared to more established destinations, this represents an opportunity to build a strong, favourable destination image through targeted digital marketing efforts.

Table 7 Stepwise Multiple Regression Analysis: Digital Marketing Predicting Perceived Image

Predictor	**β**	**t**	**p-value**	**R^2**
Influencer Marketing	.398	6.214	**< .001**	.590
Content Marketing	.271	4.389	**< .001**	
Social Media Marketing	.229	4.687	**< .001**	

$F = 45.002$, $p < .001$; Durbin-Watson = 1.889

Based on these results, hypotheses H1a (social media marketing), H1b (content marketing), and H1c (influencer marketing) were supported, whereas H1d (e-WOM) was not supported in the regression model. Although e-WOM showed a significant bivariate correlation with perceived image ($r = .480$, $p < .01$), it did not contribute unique variance beyond the other three predictors. This suggests that the influence of e-WOM may be channelled through or captured by social media marketing, content marketing, and influencer marketing, as these strategies often generate and amplify e-WOM.

4.8 Correlation Between Perceived Image and Revisit Intention

Table 8 presents the Pearson correlation coefficients between the five perceived image dimensions and revisit intention. All five dimensions exhibited statistically significant positive correlations with revisit intention ($p < .01$). Attractiveness showed the strongest correlation ($r = .612$), followed by uniqueness ($r = .586$), credibility ($r = .548$), quality ($r = .524$), and sustainability ($r = .497$). These results provide initial support for the hypothesised positive relationships between perceived image dimensions and revisit intention.

Table 8 Pearson Correlation Between Perceived Image Dimensions and Revisit Intention

Image Dimension	r	p-value
Quality	.524**	**.000**
Credibility	.548**	**.000**
Uniqueness	.586**	**.000**
Attractiveness	.612**	**.000**
Sustainability	.497**	**.000**

**** p < .01**

4.9 Stepwise Regression: Perceived Image Predicting Revisit Intention

Stepwise multiple regression analysis was conducted to determine which perceived image dimensions significantly predict revisit intention. As shown in Table 9, all five perceived image dimensions entered the model, which explained 46.0% of the variance in revisit intention ($R^2 = .460$, $F = 36.215$, $p < .001$). The Durbin-Watson statistic of 1.899 confirmed the independence of the residuals.

Attractiveness was the strongest predictor of revisit intention ($\beta = .372$, $t = 6.224$, $p < .001$), followed by uniqueness ($\beta = .315$, $t = 5.327$, $p < .001$), credibility ($\beta = .218$, $t = 3.842$, $p < .001$), quality ($\beta = .128$, $t = 2.216$, $p = .028$), and sustainability ($\beta = .101$, $t = 1.984$, $p = .049$). These results indicate that while all five image dimensions contribute to predicting revisit intention, attractiveness and uniqueness are the most influential factors.

Table 9 Stepwise Multiple Regression Analysis: Perceived Image Predicting Revisit Intention

Predictor	β	t	p-value	R^2
Attractiveness	.372	6.224	< .001	.460
Uniqueness	.315	5.327	< .001	
Credibility	.218	3.842	< .001	
Quality	.128	2.216	.028	
Sustainability	.101	1.984	.049	

F = 36.215, p < .001; Durbin-Watson = 1.899

The finding that attractiveness is the strongest predictor of revisit intention is consistent with previous research demonstrating the central role of destination appeal in shaping tourist loyalty (Chi & Qu, 2008; Zhang et al., 2014). For agricultural tourism destinations in Chumphon, this suggests that visual appeal, experiential quality, and the overall attractiveness of tourism offerings are critical determinants of whether tourists will choose to return. The strong predictive power of uniqueness further underscores the importance of differentiating Chumphon's agricultural tourism from competing destinations through distinctive experiences, local specialities, and cultural elements.

Credibility emerged as the third-strongest predictor, underscoring the importance of trustworthy information and authentic representation in shaping destination images that encourage revisit behaviour. In the context of agricultural tourism, credibility may encompass the accuracy of promotional information regarding farm activities, the authenticity of cultural experiences, and the reliability of service delivery. Digital marketing strategies that prioritise transparency and honest representation of the tourism experience are likely to enhance perceived credibility and, consequently, revisit intention.

Quality and sustainability, while statistically significant predictors, had relatively smaller effects, suggesting that while they contribute to revisit intention, their impact may

be partially captured by or channelled through the other image dimensions. The modest but significant effect of sustainability is particularly relevant given the growing global emphasis on responsible tourism practices. As environmental awareness among travellers continues to increase, the perceived sustainability of agricultural tourism destinations may become an increasingly important driver of revisit behaviour. Nevertheless, these findings confirm that all five hypotheses (H2a-H2e) regarding the influence of perceived image dimensions on revisit intention were supported.

The overall model, which explains 46.0% of the variance in revisit intention, indicates a strong predictive relationship between perceived image dimensions and behavioural intentions. This level of explanatory power is consistent with or exceeds that reported in comparable studies of destination image and revisit intention in other tourism contexts (Chen & Tsai, 2007; Zhang et al., 2014). The remaining unexplained variance may be attributed to factors beyond the scope of this study, such as travel constraints, competitive alternatives, personal circumstances, and economic conditions.

4.10 Summary of Hypothesis Testing

Table 10 provides a comprehensive summary of the hypothesis testing results. Eight of the nine hypotheses were supported by the empirical evidence, with only H1d (the influence of e-WOM on perceived image in the regression model) not being supported.

Table 10: Summary of Hypothesis Testing Results

Hypothesis	**Result**
H1a: Social media marketing → Perceived image	Supported
H1b: Content marketing → Perceived image	Supported
H1c: Influencer marketing → Perceived image	Supported
H1d: e-WOM → Perceived image	**Not Supported**
H2a: Quality → Revisit intention	Supported
H2b: Credibility → Revisit intention	Supported
H2c: Uniqueness → Revisit intention	Supported
H2d: Attractiveness → Revisit intention	Supported
H2e: Sustainability → Revisit intention	Supported

5. Conclusion and Suggestions

5.1 Conclusion

This study investigated the influence of digital marketing factors on the perceived image of agricultural tourism destinations and tourists' revisit intention in Chumphon Province, Thailand. Based on a quantitative survey of 200 tourists, the findings can be summarised as follows.

First, tourists demonstrated high levels of awareness and appreciation for digital marketing strategies used to promote agricultural tourism in Chumphon, with e-WOM and content marketing receiving the highest ratings. This indicates that peer-generated content and well-crafted digital narratives are particularly effective in reaching and engaging the target audience of agricultural tourism.

Second, three digital marketing factors—influencer marketing, content marketing, and social media marketing—were found to significantly predict perceived destination image, collectively explaining 59.0% of its variance. Influencer marketing emerged as the

most powerful predictor, underscoring the growing importance of social media influencers in shaping destination perceptions in the agricultural tourism sector. The exclusion of e-WOM from the regression model suggests that the other three digital marketing strategies may subsume its effects.

Third, all five dimensions of perceived destination image—attractiveness, uniqueness, credibility, quality, and sustainability—significantly predicted revisit intention, accounting for 46.0% of its variance. Attractiveness and uniqueness were the strongest predictors, indicating that the visual appeal and distinctive character of agricultural tourism destinations are the primary drivers of repeat visitation.

Fourth, the demographic profile of agricultural tourists in Chumphon reveals a predominantly female, middle-aged, well-educated, and middle-income segment that travels primarily for relaxation and relies heavily on online media for travel information. These insights provide a clear picture of the target market for digital marketing campaigns. The predominance of online media as an information source (41.5%) reinforces the critical importance of maintaining a strong digital presence for agricultural tourism promotion.

Fifth, the analysis of travel behaviour patterns provides additional context for understanding tourist engagement with agricultural tourism in Chumphon. The finding that 55% of respondents stayed for 2–3 days suggests that agricultural tourism in Chumphon primarily serves as a short-duration getaway, with implications for the design of tourism packages and marketing messages. The dominance of private car transportation (60%) indicates that road accessibility and driving route information should be integrated into digital marketing content. Furthermore, the relatively moderate expenditure levels (35% spending 3,001–5,000 Baht) suggest that agricultural tourism in Chumphon is positioned as an affordable leisure option, which should be reflected in marketing positioning strategies.

5.2 Theoretical Implications

This study contributes to the existing body of knowledge in several ways. It extends the application of digital marketing and destination image theories to the context of agricultural tourism, a field underexplored in the literature. The finding that influencer marketing is the strongest predictor of perceived image adds to the growing body of evidence supporting the effectiveness of influencer-based marketing in tourism. Furthermore, the identification of e-WOM's non-significant unique contribution in the regression model provides nuanced insights into the interrelationships among different digital marketing strategies and their collective impact on destination perceptions.

5.3 Practical Implications and Suggestions

Based on the findings, the following practical recommendations are offered for tourism authorities, destination marketers, and agricultural tourism operators in Chumphon Province:

First, destination marketers should prioritise influencer marketing by establishing partnerships with travel influencers and content creators who specialise in agricultural tourism, eco-tourism, and rural experiences. These influencers should be invited to experience Chumphon's agricultural tourism offerings firsthand and create authentic, engaging content that showcases the destination's unique attributes.

Second, content marketing strategies should be enhanced by developing high-quality visual content, including professional photography, video tours, interactive maps, and storytelling content that highlights the educational, cultural, and experiential dimensions of agricultural tourism in Chumphon. Special attention should be given to showcasing the destination's uniqueness and attractiveness, as these are the strongest drivers of revisit intention.

Third, social media marketing efforts should be optimised by maintaining an active and engaging presence on platforms popular with the target demographic, particularly Facebook, Instagram, LINE, and TikTok. User-generated content should be encouraged and featured to amplify organic reach and build community engagement.

Fourth, quality improvement initiatives should address the relatively lower perceived quality scores by enhancing service standards, infrastructure, and visitor amenities at agricultural tourism sites. Similarly, sustainability communication should be strengthened by highlighting environmental and cultural preservation efforts through digital channels.

Fifth, given that 50% of respondents were first-time visitors, strategies should be developed to convert them into repeat tourists through personalised follow-up communications, loyalty programs, and seasonal promotions delivered via digital channels. Email marketing and LINE official accounts can be used to maintain ongoing engagement with past visitors, share seasonal updates on fruit-harvesting periods, and promote special events and festivals.

Sixth, tourism authorities should invest in digital marketing capacity building for local agricultural tourism operators and community-based tourism enterprises. Many small-scale operators may lack the technical skills and resources to implement effective digital marketing strategies independently. Training programs, digital marketing toolkits, and collaborative platforms that enable operators to promote Chumphon's agricultural tourism offerings collectively would help address this gap and ensure a consistent, compelling digital presence for the province.

Seventh, developing an integrated digital marketing strategy that coordinates efforts across all four digital marketing dimensions would maximise the collective impact on destination image and revisit intention. Such a strategy should ensure that influencer marketing campaigns are supported by high-quality content marketing, amplified through social media channels, and reinforced by positive electronic word of mouth from satisfied visitors.

5.4 Limitations and Future Research

This study has several limitations that should be considered when interpreting the results. First, the use of convenience sampling limits the generalizability of the findings to the broader population of agricultural tourists. Future research should employ probability sampling techniques to enhance external validity. Second, the cross-sectional design captures perceptions at a single point in time, and longitudinal studies would provide deeper insights into how digital marketing influences change over time. Third, the study focused exclusively on Chumphon Province, and comparative studies across multiple agricultural tourism destinations would strengthen the generalizability of the findings. Fourth, the exclusion of qualitative data limits the depth of understanding regarding the mechanisms through which digital marketing influences destination perceptions. Future research should adopt mixed-methods designs to provide richer insights. Finally, while substantial, the R^2 values suggest that other factors not included in this study may also influence perceived image and revisit intention, warranting further investigation.

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Chinese university MOOCs: Usability, impact, and educational outcomes

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Abstract

This study investigates the use and impact of Chinese university MOOCs (Massive Open Online Courses) on learners, employing a mixed-methods approach with both quantitative and qualitative data. A survey of 21 respondents from Nanning, Guangxi, China, including students, working professionals, and lifelong learners, examined their experiences, perceptions, and challenges related to Chinese MOOCs. Survey results indicated high engagement with MOOCs, with 16 out of 21 participants having used them. However, low course completion rates were noted, as more than half of respondents (14 out of 21) reported not finishing at least one course. Usability was generally positive, with the majority finding the platforms easy to navigate. While internet access and technology were not widespread barriers for participants, professional recognition of MOOCs and their usefulness for career advancement received mixed responses. The study suggests that to increase the impact of Chinese university MOOCs, challenges such as course completion rates, digital access, and standardized accreditation must be addressed.

Keywords: MOOCs, Chinese universities, Usability, Educational outcomes, Lifelong learning

Introduction

The rise of Massive Open Online Courses (MOOCs) in China has reshaped the nation's educational landscape. Platforms offering open access to high-quality courses and certifications have increased educational accessibility. MOOCs provide flexible learning opportunities, allowing students to engage with academic and professional content without traditional barriers of time, location, and cost. This paper examines the usability, impact, and educational outcomes of Chinese university MOOCs, focusing on their potential to improve learning experiences and professional growth, while addressing issues unique to the Chinese context, such as digital divides, resource disparities, and cultural considerations (Shen et al., 2016; Li, 2021; Tan & Tasir, 2024).

MOOCs in China have contributed to educational equity and innovation by offering numerous free, high-quality courses. These courses promote resource sharing and support lifelong learning (Dong, 2017; Bai et al., 2024). However, uneven access to technology and the need for improved platform management remain significant issues (Zhang et al., 2019). Resolving these issues will maximize the potential of MOOCs in China's educational system.

The rapid development of Massive Open Online Courses (MOOCs) in China has significantly expanded access to higher education, offering flexible, low-cost learning opportunities to a diverse population. Platforms such as iCourse, supported by leading

universities and the Ministry of Education, have democratized education by providing high-quality content to learners across different regions and backgrounds. However, despite their growing popularity and potential for impact, Chinese university MOOCs face persistent challenges that limit their effectiveness. These include low course completion rates, unequal access due to digital divides, variable course quality, and limited recognition of MOOC certifications by employers. While MOOCs are increasingly used for professional development and lifelong learning, questions remain about their usability, perceived value, and actual outcomes among different learner groups. There is a need for a deeper understanding of learners' experiences with Chinese MOOCs, the barriers they face, and the extent to which these platforms fulfill their educational and professional objectives.

This study is significant as it contributes to the growing body of knowledge on the effectiveness and limitations of MOOCs in the Chinese higher education context. With China's increasing emphasis on digital education and lifelong learning, understanding the real-world impact of MOOCs is essential for guiding future policy and practice. By exploring the usability, accessibility, and perceived value of Chinese university MOOCs from the perspective of learners, this research provides critical insights into the strengths and weaknesses of current MOOC platforms. The findings can inform educators, policymakers, and platform developers about areas that require improvement, such as learner engagement strategies, quality assurance mechanisms, and the alignment of MOOC content with labor market needs. Additionally, this study offers a localized perspective that complements global MOOC research by focusing on the unique challenges and opportunities present in the Chinese educational landscape.

The objectives of this research are as follows:

1. To investigate the usage patterns, satisfaction levels, and course completion rates of Chinese university MOOCs among learners from various backgrounds.
2. To identify the primary barriers to effective participation in MOOCs, including technological, motivational, and structural challenges.
3. To assess the perceived value and professional relevance of MOOC certifications in the context of career development and lifelong learning.
4. To explore learners' opinions on the usability, content quality, and support mechanisms offered by Chinese university MOOC platforms.
5. To provide recommendations for improving the design, accessibility, and recognition of MOOCs within China's higher education and professional training systems.

Literature Review

Chinese university MOOCs, such as iCourse, represent an innovative approach to expanding access to quality education. Developed by NetEase and Higher Education Press, and supported by the Ministry of Education, iCourse provides free access to MOOCs from top Chinese universities. This initiative enables individuals to pursue self-improvement and higher education without financial barriers, promoting educational equity and social progress.

MOOCs are designed to offer accessible and inclusive learning opportunities. These courses replicate traditional education through video lectures, discussions, assignments, and exams. Chinese MOOCs, including iCourse, are typically overseen by academic institutions, ensuring consistent quality across offerings. Instructors follow strict processes for course development, including content design, recording, editing, and providing support during the course. Learners who complete the courses earn electronic certifications, endorsed by

instructors, that demonstrate mastery of the subject and enhance their professional credentials.

The platform offers diverse courses from leading institutions, including China's "985" universities, allowing learners to engage with distinguished educators (Xiong et al., 2021). This access to high-quality educational content enhances learning opportunities for a wide range of individuals.

Course completion on the platform is validated with certifications endorsed by instructors, serving as a reflection of academic achievement (Zhang & Chen, 2022). These certifications provide learners with formal recognition of their accomplishments and contribute to their professional qualifications.

The learning experience is further enriched through a combination of short videos, assignments, discussions, and peer interactions, all of which allow learners to progress at their own pace and access real-time support (Liu, 2013). This flexible and interactive format supports various learning styles and fosters a more engaging educational experience.

The introduction of MOOCs like iCourse has transformed higher education in China, breaking down barriers to learning and promoting educational equity. However, some studies have noted the difficulties in achieving broader impact, such as ensuring equal access across different demographics and regions (Tian & Xia, 2017). Despite these challenges, iCourse exemplifies how technology can democratize education and empower individuals to pursue both academic and professional growth.

Chinese university MOOCs represent a transformative approach to education with a global reach. These courses enable individuals from all over the world to enroll and access learning materials regardless of their location, promoting lifelong learning. The courses cater to a broad spectrum of learners, from those seeking introductory courses to those pursuing advanced professional development programs. This flexibility is particularly valuable for working professionals looking to upskill or reskill.

Chinese MOOCs are a significant part of China's education digitization strategy, helping to bridge the global education gap. These platforms provide digital tools for lifelong learning, offering learners flexible access to educational resources.

Chinese university MOOCs, like those on the national platforms, allow learners to acquire professional skills through interactive educational models. This aligns with research emphasizing the potential of MOOCs to promote lifelong learning across various populations (Li, 2019).

Lifelong learning facilitated by MOOCs supports global workforce adaptability. Professionals around the world use these platforms to improve skills while balancing their careers. International research has documented the role of MOOCs in supporting lifelong learning (Bordoloi et al., 2020).

MOOCs promote inclusive, high-quality education, in line with UNESCO's Education 2030 framework. Their global reach makes them an important element in advancing lifelong learning opportunities (Zhang et al., 2019).

The incorporation of MOOC platforms into educational strategies promotes individualized and accessible learning, benefiting adult learners and professionals. This approach has been widely recognized for its positive impact on adult education (Zhang, 2019).

Chinese university MOOCs are mainly asynchronous, allowing learners to progress at their own pace. This flexibility enables students to manage their educational goals alongside personal and professional responsibilities. Research has emphasized the importance of this flexibility, particularly for adult learners and professionals with irregular schedules (Zhang & Chen, 2018).

Although many Chinese university MOOCs are free, some charge nominal fees for certificates or additional features, such as personalized tutoring. This model reduces financial barriers and democratizes access to high-quality educational resources. Studies show that MOOCs enhance inclusivity by providing scalable and affordable education to global learners (Zhang, 2019).

MOOCs are crucial for skill development, career transitions, and industry-specific learning. Certifications from these courses are often recognized in professional settings, making them valuable tools for career advancement. Research confirms that MOOCs help learners meet workforce demands by offering practical, relevant knowledge in an accessible online format (Small et al., 2019).

While Chinese university MOOCs have the potential to expand educational access, they face challenges such as low completion rates, digital accessibility issues, and concerns with quality assurance.

A major issue is the low completion rate, with many learners enrolling in courses but failing to finish due to a lack of motivation, time, or support. The absence of structured classroom environments and direct interactions with instructors and peers contributes to this disengagement. Research indicates that factors like perceived usefulness and learning behavior significantly affect MOOC performance, with self-discipline playing an important role (Wang et al., 2020).

Despite their accessibility, MOOCs face challenges due to the digital divide, which limits participation for learners in underserved or remote areas without reliable internet or modern devices. Research shows that socioeconomic factors such as GDP and regional disparities significantly affect MOOC accessibility, with urban learners benefiting more than those in rural areas (Sun et al., 2022). This divide creates obstacles to equitable knowledge distribution.

The lack of standardized accreditation and inconsistent course quality affects the value and recognition of MOOC certificates. While MOOCs offer flexible learning, the absence of strict quality controls and accreditation processes raises concerns about their utility in professional settings. Studies suggest that establishing standardized evaluation mechanisms could improve the reliability and acceptance of MOOCs in academic and professional contexts (Li, 2017).

Chinese university MOOCs provide accessible opportunities for individuals to acquire new skills, enabling career transitions or adaptation to emerging job requirements. These courses offer training in high-demand fields such as artificial intelligence, cybersecurity, and business analytics. Research indicates that MOOCs allow learners to quickly bridge skill gaps, aligning their capabilities with evolving industry needs (Guo et al., 2019). Furthermore, professional adaptability and job search success have been linked to the targeted skill development MOOCs provide (Pan et al., 2018).

Although employer recognition of MOOCs in China is increasing, challenges persist. Some employers value the skill improvement and lifelong learning potential MOOCs offer, particularly in technical and analytical fields. However, inconsistent course standardization, lack of authoritative certification, and concerns about practical applicability limit widespread acceptance (Li, 2017). Research emphasizes the need for third-party accreditation mechanisms and closer collaboration with industry to improve the credibility and relevance of MOOCs (Zhang & Deng, 2013).

Methodology

This study employed a mixed-methods approach to examine the knowledge and impact of Chinese university MOOCs on learners. Data was collected through both quantitative surveys understand participants' experiences with Chinese university MOOCs and their perceptions of the platform's effectiveness.

A total of 21 respondents from Nanning, Guangxi, China, including students, working professionals, and lifelong learners, participated in the questionnaire survey. These respondents came from different educational backgrounds to understand their different views on Chinese university MOOCs.

The primary data collection method involved a survey distributed online to participants. The survey consisted of both closed-ended and open-ended questions related to learners' use of Chinese university MOOCs, ease of use, course completion rates, satisfaction, and challenges faced. In addition, 21participants were interviewed in-depth to gain a deeper understanding of their motivations, experiences, and perceived outcomes of participating in Chinese university MOOCs.

Survey data were analyzed using descriptive statistics to measure trends in Chinese university MOOCs usage, completion rates, and learner satisfaction. The qualitative interview data were coded and analyzed thematically to identify common themes, such as barriers to completion, reasons for engagement, and the impact of Chinese university MOOCs on career development.

Results and Discussion

The research results indicate a relatively high level of engagement with Chinese MOOCs among the respondents, with more than half (16 out of 21) reporting that they had used these platforms. This suggests that MOOCs are a widely accessible and popular resource for many learners in the sample. However, a significant issue arises with course completion. More than half of the respondents (14 out of 21) reported not completing at least one MOOC course, which points to a common challenge faced by learners: the inability to finish courses despite initial engagement. This could be due to various factors, such as a lack of time, motivation, or course design elements that fail to maintain learner interest.

In terms of usability, the majority of respondents (12 out of 21) agreed that they found it easy to navigate online platforms for MOOCs. This suggests that the user experience of these platforms is generally positive, and technical barriers to entry are not a significant issue for most learners.

Regarding internet access and technology, the responses were more varied. Thirteen respondents (out of 21) were neutral on the matter, indicating that while some individuals may face challenges in accessing the necessary technology or internet resources, this is not a widespread problem among the sample. This finding suggests that for many learners, technical issues do not significantly hinder their ability to engage with MOOCs.

In terms of the professional utility of MOOCs, the majority of respondents (11 out of 21) agreed that MOOCs are a useful resource for gaining new skills. This reflects the recognition of MOOCs as valuable tools for professional development. However, opinions about the recognition of MOOCs in the job market were divided. The largest group of respondents (9 out of 21) remained neutral on whether MOOCs should be recognized by employers as legitimate qualifications, with 8 agreeing but none strongly agreeing or disagreeing. This indicates uncertainty or differing opinions regarding the legitimacy and recognition of MOOCs as qualifications by employers.

Finally, when asked about recommending MOOCs to others for professional development, the responses were also mixed. Most respondents (11 out of 21) were neutral, and 8 agreed. This suggests that while some respondents see value in MOOCs for career advancement, there is hesitance or uncertainty about fully endorsing them, possibly due to concerns over their recognition in professional settings.

Overall, the data shows a positive engagement with Chinese MOOCs, with some mixed opinions on their effectiveness, completion rates, and professional recognition. While MOOCs appear to be a valuable resource for skill development, issues like course completion rates, recognition in the job market, and varied opinions on their usefulness for career advancement may need to be addressed to improve their overall impact.

Chinese University MOOCs (Massive Open Online Courses) have transformed education in China by expanding access to high-quality courses from prestigious institutions. These platforms offer flexible, self-paced learning opportunities that support academic and professional development for learners from diverse backgrounds. By providing courses from renowned universities and instructors, MOOCs foster a culture of lifelong learning and skill development, contributing to increased educational inclusivity (Li, 2019).

However, Chinese University MOOCs face several challenges. Time constraints, lack of motivation, and limited interaction contribute to low course completion rates. Research suggests that improving learner engagement and providing more support can help address these issues (Wang et al., 2020). Unequal access to reliable internet and modern devices, especially in rural and underserved areas, hinders equitable participation in MOOCs (Li, 2019). Additionally, variability in course quality and the absence of standardized accreditation undermine the credibility of MOOC certifications among employers. Research indicates that implementing robust quality control measures and collaborating with employers could help improve the recognition of these courses (Zhang & Chen, 2018).

To enhance their impact, Chinese University MOOCs need to address these challenges by creating more engaging and interactive courses to reduce dropout rates. Expanding internet access and providing technological support can help bridge the digital divide. Furthermore, establishing quality assurance systems and standardized accreditation processes will improve the recognition and value of MOOC certifications (Li, 2017).

To enhance the effectiveness and impact of Chinese university MOOCs, several key improvements are recommended based on the findings of this study. First, course design must be improved to address low completion rates, which remain a significant challenge. MOOC platforms should integrate more interactive and engaging elements, such as real-time discussions, quizzes with instant feedback, gamification features, and live question and answer sessions with instructors. These tools can help maintain learner interest and foster a stronger sense of connection. Additionally, structured learning paths with clearly defined milestones and progress indicators would support learners in managing their time and staying motivated throughout the course duration.

Another critical area for improvement is learner support. Providing academic guidance through moderated discussion forums, peer mentoring, and access to teaching assistants can help reduce dropout rates and enhance the learning experience. Automated reminders and motivational messages can also serve to re-engage learners who may be at risk of disengagement. Personalizing the learning experience using adaptive technologies that tailor content to individual needs and performance levels can further increase retention and satisfaction.

Addressing the digital divide is essential for ensuring equitable access to MOOCs. While many urban learners benefit from robust technological infrastructure, those in rural and underserved areas still face barriers due to limited internet connectivity and access to modern devices. To bridge this gap, there should be greater investment in infrastructure and the

provision of affordable internet or learning devices for disadvantaged populations. Moreover, MOOC platforms should offer offline learning options, such as downloadable course materials and mobile-optimized interfaces, to accommodate learners in low-bandwidth environments.

Improving the quality and credibility of MOOCs also requires the implementation of standardized accreditation mechanisms. Establishing national or third-party quality assurance systems would help verify the academic and practical value of courses, ensuring that certifications carry weight in both academic and professional contexts. Regular evaluations of course content and instructional quality should also be conducted to maintain high standards and relevance in an evolving educational landscape.

To enhance the professional utility of MOOCs, stronger collaboration between course providers and industry stakeholders is necessary. Course content should be aligned with current job market demands, particularly in high-growth fields such as artificial intelligence, cybersecurity, and data analytics. These partnerships can also support the development of recognized credentials or micro-certifications that employers value. Awareness campaigns and employer engagement efforts can further improve the acceptance and integration of MOOC certifications into hiring and promotion decisions.

MOOC platforms should continue to focus on lifelong learning by offering flexible, career-focused programs that cater to adult learners and working professionals. Modular course structures, self-paced learning formats, and practical, skills-based content are essential to supporting ongoing professional development. Further research, including longitudinal studies and learning analytics, should be conducted to evaluate the long-term impact of MOOCs on learners' career progression and educational outcomes. These insights will inform future improvements and ensure that MOOCs remain a relevant and powerful tool for inclusive, high-quality education in China.

Conclusion and Suggestions

Chinese university MOOCs have made significant strides in enhancing access to education and providing flexible learning opportunities for a diverse range of learners. The study found that MOOCs have potential benefits for professional development, with a majority of respondents recognizing the value of these platforms in acquiring new skills. However, the low course completion rates and the varied perceptions about their professional value highlight areas for improvement. To maximize the potential of MOOCs, it is essential to focus on strategies that improve learner engagement, expand access to technology, and establish standardized accreditation processes. Such measures could further enhance the credibility of MOOCs, ensuring that they provide not only accessible learning opportunities but also tangible outcomes in the job market.

Future research on Chinese university MOOCs could further explore several key areas to enhance the understanding of their impact and effectiveness. First, longitudinal studies could track learners over an extended period to assess the long-term benefits of MOOCs in terms of career progression, skill retention, and academic achievement. This would provide deeper insights into the sustained value of MOOCs beyond initial course completion.

Additionally, future studies could focus on understanding the factors that influence course completion rates more thoroughly. Identifying specific barriers such as time management, motivation, or course design elements could guide the development of more engaging and supportive learning environments. Further research could also evaluate the effectiveness of various interventions aimed at increasing engagement and completion, such as personalized feedback, peer support networks, and adaptive learning technologies.

Another promising area for future research is the exploration of MOOCs' role in bridging the digital divide. Studies could examine how rural and underserved populations access and engage with MOOCs, and the effectiveness of initiatives aimed at improving technology access in these regions. Research on the intersection of MOOCs and social equity could identify strategies to ensure more equitable participation.

Finally, the question of employer recognition and the professional credibility of MOOC certifications warrants more attention. Investigating employer attitudes toward MOOC qualifications across different industries, as well as the potential for third-party accreditation, could help determine how MOOCs can be better integrated into the job market. Research on the development of standardized quality control measures and their influence on the credibility of MOOCs could also be valuable.

Exploring these areas in future research will not only improve the design and impact of MOOCs but also contribute to a more comprehensive understanding of how digital education can support lifelong learning and workforce development.

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Advantages and Challenges of Chinese Doctoral Degree Students Studying in International Programs in Thailand

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Abstract

With globalization, many Chinese students choose to study in Thailand. The decision to study in Thailand is influenced by personal, economic, policy, institutional, and cultural factors. The study found that respondents considered studying in Thailand to be cost-effective, geographically convenient, and accessible due to the low language barrier. Most students found the cost of living met expectations, although some still felt financial pressure. Students encountered problems with the visa application process, particularly communication barriers, even with access to information. Most participants recognized the internationalization of Thai universities, but opinions on teaching quality varied. In terms of cultural adaptation, dietary issues were the primary difficulty, with religious factors having a minor impact. Overall, the appeal of studying in Thailand lies in its low cost and international environment, with visa procedures, varying teaching quality, and cultural adaptation posing obstacles.

Keywords: Chinese students, International programs, Study abroad, Advantages and challenges.

Introduction

Recent data shows that an increasing number of mainland Chinese students are choosing to study in Southeast Asia rather than Western countries. This shift is primarily due to the relatively lower costs of education in the region and the competitive nature of graduate entrance exams in China. Experts argue that affordable education options in Southeast Asia, combined with difficulties in securing postgraduate spots in China, make countries such as Thailand, Malaysia, and Singapore more attractive. Many students, particularly those who fail China's postgraduate exams, seek education abroad as an alternative (Sharma, 2023).

Surveys indicate that 40% to 66% of students who fail the postgraduate exam in China apply to universities in Asia. With around three million students annually failing to gain admission to graduate programs, this trend is expected to rise. Additionally, the White Paper on Studying in China reports that staying close to home has become more appealing after the COVID-19 pandemic, with Southeast Asia emerging as a preferred destination due to its cultural proximity and lower costs (Sharma, 2023).

In Southeast Asia, Chinese students now represent a significant proportion of the international student population. For example, Chinese students account for more than 60% of foreign students in both Malaysia and Thailand. This trend reflects the ease of cultural adaptation and the relatively simple visa and admission processes compared to Western countries. As the Chinese government strengthens its ties with Southeast Asia, the region

has become a strategic destination for both education and employment prospects (Sharma, 2023).

Southeast Asia's universities, including those in Malaysia and Thailand, offer prestigious programs that are more accessible than those in the West. Furthermore, students in Southeast Asia may benefit from employment opportunities within the region after graduation. This, along with the growing trend of Chinese students returning to China with qualifications from Southeast Asian countries, underscores the increasing importance of these destinations for Chinese students seeking affordable and accessible international education (Sharma, 2023).

This research contributes to the growing body of knowledge regarding Chinese students' motivations and experiences when studying in Southeast Asia, specifically in Thailand. With globalization and shifting educational trends, Thailand has become an increasingly popular destination for Chinese students due to factors such as cost-effectiveness, geographical proximity, and ease of cultural adaptation. The study's significance lies in its ability to highlight the multifaceted reasons behind this growing trend, including personal, economic, policy, institutional, and cultural factors that influence decision-making.

Understanding these factors is important for universities and policymakers in Thailand and other Southeast Asian countries aiming to attract more international students. The research provides valuable insights into the challenges and advantages faced by Chinese students, including issues related to visa applications, varying teaching quality, and cultural adaptation. By identifying these factors, the study can inform improvements in student support services, such as enhancing communication during the visa application process and addressing dietary concerns for cultural adaptation.

Furthermore, the findings underscore the importance of Southeast Asia as a viable alternative for Chinese students who may find it difficult to pursue higher education in Western countries due to financial or competitive constraints. As the demand for international education in Southeast Asia continues to rise, this research provides a timely and relevant understanding of the factors that influence Chinese students' decisions and how institutions can better serve this growing demographic. Ultimately, the study contributes to enhancing the study abroad experience for Chinese students and offers guidance for universities and stakeholders to refine strategies for attracting and supporting international students from China.

Literature Review

Globalization has created significant opportunities for students to study abroad, promoting independence and offering experiences not available at local universities. The United States has the largest number of international students, but recently, more Chinese families have chosen to send their children to Southeast Asia. As China's population becomes more affluent, middle-income families are also able to afford the tuition fees of foreign universities. However, due to cost concerns, these families tend to select destinations with lower tuition fees, such as Malaysia, South Africa, Thailand, and Russia (Lin, 2014).

In October 2023, General Secretary Xi Jinping expressed his hopes for overseas students to continue the tradition of studying abroad to serve China. He emphasized their role in promoting innovation, fostering international exchanges, and contributing to national development. Since China's reform and opening up, over 8 million mainland Chinese students have studied abroad, with the total number, including those from Hong Kong, Macao, and Taiwan, surpassing 10 million. These students have made significant contributions to China's economic, technological, and social development (Center for China and Globalization, 2023).

The 20th National Congress report stressed the importance of education, science, and talent in building a modern socialist country. As China moves forward with its modernization efforts, there is an increased demand for international talent to support scientific innovation, industrial transformation, and global governance. Overseas students play a vital role in these efforts. China remains the largest source of international students globally. In 2021, 1.021 million Chinese students were studying abroad, more than twice the number from India. Despite the pandemic's impact, the demand for overseas study remains strong. The destinations for Chinese students have become more diverse, with significant numbers studying in the US, UK, Australia, and countries within the Belt and Road Initiative, such as Malaysia and Thailand (Center for China and Globalization, 2023).

The choice of majors among Chinese students remains focused on STEM fields, with business studies seeing a decline. The trend of returning students is increasingly evident, with over 6 million students returning to China since the reform era. These students have become a crucial part of China's modernization and global participation (Center for China and Globalization, 2023).

Overseas students contribute significantly to China's scientific, economic, and cultural development. Many hold key positions in academia, business, and government. The increasing number of returned students also plays a role in global governance, as they bring international perspectives to China's policies and initiatives (Center for China and Globalization, 2023).

Furthermore, overseas students are instrumental in promoting China's people-to-people diplomacy and cultural exchanges. General Secretary Xi Jinping has acknowledged their potential in advancing mutual understanding between China and the world. These students, by sharing their experiences, help tell China's story and strengthen international relations, contributing to global peace and stability (Center for China and Globalization, 2023).

Xie (2022) explored the impact of transnational higher education (TNHE) partnerships in China on Chinese students' intercultural communicative competence (ICC) and their motivation to study abroad. With a growing trend of Chinese students experiencing cultural diversity, there remains limited research on the role TNHE partnerships play in preparing students for international study. Xie's qualitative case study at the University of Nottingham Ningbo China, a representative TNHE institution, used Byram's (2009) model of ICC for deductive thematic analysis. Findings revealed that Chinese students chose to study at TNHE institutions primarily for their English-focused learning environments. Furthermore, TNHE partnerships in China positively influenced students' ICC development, which in turn played a significant role in their motivation to study abroad.

Similarly, Gong, Gao, Li, and Lai (2021) examined the challenges and adaptation strategies of New Zealand students studying abroad in China. The study involved 15 participants who reflected on their experiences through journals and group interviews. Analysis identified various challenges, such as language barriers, lifestyle adjustments, academic differences, and sociocultural issues. In response, participants developed strategies to enhance their cognitive, emotional, and skill development to improve communication with local Chinese people. The study highlighted the need for language educators to update teaching methods and recommended offering counseling services to support students' cultural adaptation and language acquisition during study abroad programs.

Wang, Taplin, and Brown (2011) applied McLeod and Wainwright's framework to assess mainland Chinese students' satisfaction with the Chinese Curtin Student Accounting Academic Programme. A survey of Chinese students enrolled at Curtin University revealed that adequate preparation for studying in Australia, as well as an understanding of the cultural and instructional differences between China and Australia, was crucial for student success. The authors applied social learning theory, which suggests that behavior is shaped

by the expectation that specific actions will lead to desirable rewards. In this case, students who felt more prepared for their studies expressed higher levels of satisfaction with the program, highlighting the importance of preparation in study abroad experiences.

Yang, Webster, and Prosser (2011) investigated the goals, experiences, and learning outcomes of 214 undergraduates from a Hong Kong university who studied abroad or participated in internships/volunteer work across 20 countries. They introduced an experiential intercultural learning model to frame study abroad as a goal-driven process that enhances students' intercultural, disciplinary, career, and personal competencies. The study found strong interconnections between students' study abroad goals, their host country experiences, and learning outcomes. Analysis revealed that students who perceived alignment between their goals and learning outcomes showed greater personal development, intercultural growth, and career advancement. The findings suggest that to maximize the benefits of study abroad, students should be encouraged to set and pursue goals related to intercultural, personal, and academic/career growth.

These studies collectively emphasize the importance of goal-setting, cultural preparation, and experiential learning in maximizing the benefits of study abroad. They demonstrate that student satisfaction and personal development are closely linked to the intentional pursuit of intercultural and academic growth, as well as to the support systems provided during the study abroad experience.

The internationalization of higher education in Thailand has emerged as a critical area of academic inquiry, particularly in the context of regional competition within ASEAN and global economic pressures. This literature review examines existing research on international degree programs in Thailand, exploring their development, challenges, and effectiveness in attracting international students and preparing graduates for the global economy.

Sinhaneti (2011) establishes the foundational framework for understanding Thai higher education's mission, identifying four core principles that govern university operations: providing academic and professional education, conducting research for knowledge generation, offering public service, and preserving cultural heritage. The study highlights emerging trends including increased commercialization, international cooperation, and corporate social responsibility initiatives across both private and public universities. The research emphasizes the growing prevalence of faculty and student exchanges, international MOUs, and English-taught programs across various disciplines, positioning Thai institutions to serve as regional education hubs while maintaining focus on lifelong learning and community development.

Building upon this foundation, Kanjananiyot and Chaitiamwong (2018) provide a comprehensive 25-year analysis of Thailand's internationalization efforts since the First 15-Year Long-Range Plan on Higher Education (1990-2004). Their longitudinal study reveals gradual but positive results in terms of international student numbers, program offerings, and institutional partnerships. The researchers identify four critical factors influencing internationalization: Thai education reform, cultural traditions in educational administration, global education development, and ASEAN Economic Community realization. They emphasize that quality improvement remains essential for successful internationalization, requiring better policy alignment and resource maximization to achieve collective implementation of internationalization goals.

From a more critical perspective, Rhein (2017) examines five core problems facing international higher education in Thailand in the twenty-first century. The study positions Thailand's challenges within the broader ASEAN context, noting that other member states continue to outpace Thailand in higher education growth and quality. The research identifies demographic shifts, quality attainment issues, internationalization barriers, and sociocultural

factors as primary obstacles. Rhein argues that despite Thailand's geographic and social advantages for capitalizing on regional employment changes, rising education costs and limited English language accessibility prevent many Thai students from acquiring essential 21st-century skills, potentially threatening foreign investment and economic competitiveness.

Pongsin et al. (2023) contribute empirical evidence through mixed-methods research examining Thailand's position as an international education hub for Asian students. Their study, incorporating expert interviews, surveys, and autoethnographic approaches, documents dramatic growth in Asian student enrollment at Thai universities over two decades. The research identifies Thailand's competitive advantages as low costs, strategic location, quality campus facilities, and welcoming attitudes toward international students. However, the study also reveals significant disadvantages, particularly regarding the quality of international programs and English language capabilities among faculty and staff, highlighting the gap between quantity and quality in Thailand's internationalization efforts.

Chalapati (2024) provides historical context by examining the impact of economic globalization on Thai higher education following the 1997-1998 financial crisis. This thesis demonstrates how economic pressures led to comprehensive education reform, shifting focus from nation-building to human capital development. The research reveals how government and employer demands for globally relevant skills drove universities to emphasize English proficiency and establish English-medium business programs branded as "international." However, Chalapati critically questions the appropriateness of the "international" label for programs that often merely clone Western curricula, arguing for more holistic and integrated approaches to internationalization that consider Thai cultural characteristics and cross-cultural learning environments.

From the student experience perspective, Chaiyasat (2020) offers insights into the acculturation challenges faced by international students in Thailand. Through qualitative research focusing on French exchange students, the study identifies four major areas of cross-cultural adjustment: linguistic limitations, culture shock and acculturative stress, cultural adaptation processes, and the need for supportive extracurricular activities. The research emphasizes the importance of understanding international students' lived experiences to develop effective support mechanisms and highlights the challenges of adapting to Thailand's collectivistic cultural context.

Ueaichimplee and Pilanthananond (2021) provide a comparative management perspective by analyzing international program operations across Australia, New Zealand, Japan, Hong Kong, and Singapore to develop frameworks for Thailand. Their research identifies critical management components including mission alignment, fee structures, curriculum design, authorization processes, and quality assurance mechanisms. The study distinguishes between International Programs (requiring cooperation with original program owners) and Bilingual Programs (requiring primarily domestic oversight), offering practical guidelines for program development and quality management in Thai institutions.

Finally, Theerasak and Pookkaman (2023) examine the motivational factors and experiences of foreign students participating in exchange programs at Burapha University International College. Through semi-structured interviews with 36 participants, the research identifies society and culture, affordability, and facilities and services as primary decision-making factors. The study reports overwhelmingly positive student experiences, with participants describing personal growth, valuable learning opportunities, and memorable experiences that contribute to their development as global citizens.

The literature reveals a complex landscape of international degree programs in Thailand characterized by significant growth and potential alongside persistent challenges. The research demonstrates that Thailand has made considerable progress in internationalization

over the past three decades, driven by economic pressures, regional competition, and government policy initiatives. Key strengths identified across studies include affordability, strategic location, welcoming cultural attitudes, and improving campus facilities.

However, several critical challenges emerge consistently throughout the literature. Quality concerns, particularly regarding English language proficiency among faculty and students, represent the most significant barrier to effective internationalization. The gap between the quantity of international programs and their actual quality remains problematic, with questions raised about the authenticity of "international" branding when programs simply replicate Western models without adequate cultural adaptation.

The literature also highlights the importance of student support services, cultural adaptation mechanisms, and comprehensive management frameworks for successful international program implementation. While student experiences are generally positive, the research emphasizes the need for better understanding of cross-cultural challenges and more effective support systems.

Overall, the literature suggests that Thailand's international degree programs show promise but require substantial improvements in quality assurance, faculty development, authentic internationalization approaches, and student support services to realize their full potential as competitive offerings in the regional and global higher education market.

Methodology

This study employed a qualitative research method using in-depth interviews to explore the factors influencing Chinese students' decisions to study in Thailand. The research specifically focused on personal, economic, policy, institutional, and cultural factors that shaped their decision-making process. The study involved five respondents, all of whom were current Chinese students studying in Thailand on a doctoral degree program. The participants were 4 males and 1 female that had been studying in Thailand for less than 1 year. These respondents were selected purposively to ensure they had direct and relevant experience regarding the research topic.

Data was collected through semi-structured interviews. The interview guide covered key themes such as motivations to study in Thailand, the cost of living, the visa application process, teaching quality, the internationalization of Thai universities, and cultural adaptation challenges. Interviews were conducted in person. All interviews were audio-recorded for transcription and analysis.

Thematic analysis was employed to analyze the interview data. The data was transcribed and coded, with recurring themes identified based on the research questions. Ethical considerations were carefully observed throughout the study. Informed consent was obtained from all participants, ensuring they understood the purpose of the study and their rights. Participants were assured of confidentiality and were given the option to withdraw from the study at any time without penalty.

Results and Discussion

In terms of personal factors, respondents generally agreed that the cost-effectiveness of studying in Thailand, its proximity to China, and the low English language requirement were the primary reasons for choosing to study there. Regarding financial factors, most (60%) respondents indicated that the cost of living met their expectations, although some (40%) experienced financial pressure. However, the overall situation was manageable. In terms of policy factors, although respondents accessed information about the visa process through

social platforms, they encountered practical difficulties, such as miscommunication. Most respondents (60%) acknowledged the degree of internationalization of Thai universities, but evaluations of teaching quality varied based on their prior research.

In terms of cultural factors, dietary issues were the most common difficulty in cultural adjustment, while religious factors had a minimal impact. Individual differences were evident. Some respondents (60%) chose to study in Thailand for economic reasons, the manageable cost of studying was also valued. Regarding finances, there was some stress, while some remained within their budget, they still felt some financial strain. Experiences with the visa process also differed; the procedures were found to be cumbersome and time-consuming. However, some students were able to expedite the process by paying for faster services.

In addition, some respondents (60%) rated the teaching quality at Thai universities as high and all respondents found that it suited their needs. In terms of cultural factors, some respondents (60%) could not accept Thai food and opted to cook for themselves or eat at Chinese restaurants while others adapted.

According to Lin (2014), most Chinese students choose to study in Thailand due to the low costs, its proximity to China, and the high level of internationalization. However, the visa process, differences in teaching quality, and cultural adjustment issues present difficulties for international students. Experiences of these factors vary, depending on students' financial conditions and their ability to adapt.

This study on the factors influencing Chinese students' decisions to study in Thailand highlights several areas where Thai universities, policymakers, and prospective students can improve. The findings suggest that while Thailand is an attractive destination due to its affordability and proximity, key challenges related to visa processes, teaching quality, and cultural adaptation need to be addressed.

Universities should invest in improving the clarity and efficiency of their admissions and visa application procedures for international students. Creating a streamlined, user-friendly online portal that provides comprehensive, up-to-date information could significantly reduce confusion and miscommunication. Offering dedicated, multilingual support staff for visa applications would also provide a valuable resource for students navigating the often-complex process.

To address varied perceptions of teaching quality, universities should promote their academic standards more effectively. Highlighting the credentials and expertise of faculty members, providing detailed course descriptions, and showcasing successful alumni could attract more students. Additionally, implementing quality assurance measures and regular feedback mechanisms for international students would help maintain high academic standards.

To ease cultural and social adaptation, universities should enhance their student support services. Providing orientation programs that cover not just academic but also practical aspects of life in Thailand, such as dietary adjustments and local customs, is crucial. Establishing mentorship programs that pair new students with more experienced peers or local students could offer a valuable support network. Partnering with local businesses, especially restaurants, to offer a wider variety of food options or providing on-campus cooking facilities would also help students adjust to local dietary habits.

Prospective students should conduct thorough research beyond a university's marketing materials. It's recommended that students seek out firsthand accounts from current or former students on social media platforms and forums. This can provide a more realistic picture of the academic environment and help manage expectations.

Financial planning is another critical aspect. While Thailand is generally affordable, students should create a detailed budget that accounts for both living and tuition costs. It's

also important to factor in potential unexpected expenses. Finally, students should be prepared for a period of cultural adjustment, particularly concerning food. Learning a few basic Thai phrases and showing a willingness to try local cuisine can significantly improve their experience and help them integrate into the local culture.

Conclusion and Suggestions

Based on the interviewees' responses, the researcher concludes several key points. First, studying in Thailand offers a cost-effective option for students with limited budgets who still wish to pursue an international education. Second, studying abroad requires careful financial planning and an understanding of the visa application process. Third, adjustments to dietary habits can impact the quality of life, highlighting the importance of familiarizing oneself with the local culture beforehand.

This information holds significant practical value for prospective students planning to study in Thailand. By learning from the experiences of others, students can better understand the benefits and challenges of studying in Thailand, which will aid in making an informed decision about their destination. With proper preparation for visa applications and cultural adaptation, students can avoid the difficulties caused by misinformation. The insights gathered from these interviews offer both cognitive and practical guidance for future students, allowing them to enhance their study and life satisfaction and ensure a smoother study abroad experience.

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Perceptions of the Importance of English Academic Writing Skills in the Age of AI: A Study of Non-Native Postgraduate Students

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Abstract

This study investigates the perceptions of Chinese postgraduate students studying in Thailand regarding the role of Artificial Intelligence (AI) tools in academic writing. With the increasing use of AI technologies, the study explores students' attitudes toward the utility of AI in enhancing academic writing skills, their reliance on such tools, and their concerns about the ethical implications of AI use, such as plagiarism and the potential erosion of critical thinking and originality. Data collected from a 5-point Likert scale questionnaire reveal that while students acknowledge the importance of strong academic writing skills, many see AI tools as valuable aids for overcoming language barriers and improving writing efficiency. However, there is significant concern about over-reliance on AI and its impact on cognitive skills. The findings suggest that a balanced approach, where AI tools complement rather than replace traditional writing skills, is favoured. The study concludes with suggestions for educators and institutions to provide ethical guidance on AI usage and emphasizes the need for further research to explore the broader implications of AI in academic settings.

Keywords: Writing, Postgraduate Students, Perceptions, AI Tools, Non-native English Speakers.

Introduction

In recent years, the rapid advancement of Artificial Intelligence (AI) has significantly impacted various fields, including education. One area where AI's influence has become particularly prominent is academic writing. AI tools, such as language models and writing assistants, are increasingly being integrated into educational settings to support students in improving their writing skills. This study seeks to explore the perceptions of Chinese postgraduate students studying in Thailand regarding their academic writing skills in the age of AI. Specifically, it examines their attitudes toward the role of AI tools in enhancing academic writing, their reliance on such tools, and their beliefs about the importance of developing strong academic writing skills independently. Given the diverse linguistic and cultural backgrounds of international students, the study also investigates how AI tools are perceived as aids for non-native English speakers in overcoming language barriers. By understanding these perceptions, this study aims to contribute valuable insights into how AI tools are shaping academic writing practices and the ethical considerations surrounding their use in higher education.

Although AI tools assist with the mechanical aspects of writing, they cannot replace the intellectual processes required for constructing original, well-structured arguments. AI cannot engage in critical thinking or generate original ideas and arguments. These higher-

order cognitive tasks remain vital for academic writing. AI can be a valuable resource for students, helping to refine language skills, build confidence, and meet academic writing standards. Several participants noted that AI aided in expressing their ideas more clearly, particularly when addressing complex academic topics. There was an emphasis on maintaining academic integrity, indicating that students should understand the ethical limits of AI-assisted writing. Some students voiced concerns that excessive reliance on AI could promote a "shortcut mentality," where students seek quick solutions rather than engaging in the deeper intellectual work required for academic success. Although AI is widely used, many students still regard academic writing as a necessary skill. Therefore, AI should be integrated into the writing process in ways that support, rather than replace, the intellectual work inherent in academic writing (Campus Technology, 2024; Harvard Summer School, 2023; KU Center for Teaching Excellence, 2023; MSU Today, 2023; The New York Times, 2024; University of North Carolina Writing Center, 2023).

The integration of Artificial Intelligence (AI) tools into academic writing has become an increasingly common practice, particularly among non-native English-speaking students. While these tools hold potential for improving writing efficiency and assisting in overcoming language barriers, there remains limited research on how postgraduate students, particularly Chinese nationals studying abroad, perceive the role of AI in their academic writing. Specifically, it is unclear whether these students view AI tools as beneficial aids for writing improvement, or if they regard them as potentially undermining the development of essential writing skills. Additionally, concerns regarding the ethical implications of relying on AI, such as plagiarism and the replacement of cognitive skills, have yet to be fully explored in the context of international education. Therefore, this study aims to address these gaps by investigating the perceptions of Chinese postgraduate students in Thailand regarding AI's role in their academic writing, their level of reliance on such tools, and their perspectives on the balance between AI usage and traditional writing skill development.

This research is significant for several reasons. First, it provides valuable insights into the perceptions and attitudes of international postgraduate students toward the use of AI tools in academic writing, a topic that remains underexplored in current literature. As these students often face unique challenges in adapting to academic environments in a second language, understanding their views on AI tools can help inform educators and institutions about how to best integrate technology into the writing process, especially for non-native English speakers. Second, this study sheds light on the ethical considerations surrounding AI use in academia, particularly concerns about plagiarism and the potential diminishing of critical thinking and originality. These insights are crucial for developing educational policies and ethical guidelines that ensure AI tools are used responsibly in academic settings. Finally, the findings may guide the development of targeted academic support programs, helping students enhance their writing skills while balancing the benefits of AI assistance with the need for independent academic growth. This research thus contributes to the broader discourse on AI in education and supports the creation of more effective, ethical, and student-centred educational practices.

Literature Review

The integration of Artificial Intelligence (AI) in academic writing has become increasingly prevalent, particularly among students learning English. This trend presents both opportunities and challenges. AI tools can enhance writing quality and efficiency, but they also raise ethical concerns, such as plagiarism and over-reliance on AI-generated

content. This literature review aims to explore the current state of AI use in English writing among students, focusing on its benefits, issues, and future directions.

AI tools have transformed education by providing personalized feedback, language support, and content generation. Research indicates that AI can improve the writing outcomes of English as a Foreign Language (EFL) students by enhancing the quality and organization of their work. However, ethical issues remain, particularly ensuring originality and preventing over-reliance on AI. One of the key benefits of AI tools though is their ability to assist students in refining their writing. These tools can suggest grammatical corrections, improve sentence structure, and enhance clarity, which is especially beneficial for non-native English speakers who may struggle with linguistic nuances. AI also offers personalized feedback, allowing students to revise their work more effectively. This instant feedback helps students identify and correct errors faster than traditional methods. Furthermore, AI enhances efficiency and time management by automating tasks such as plagiarism detection and language learning support, saving students time and effort. This efficiency enables students to focus on more complex cognitive tasks, such as critical thinking and argument development (Guo & Zaini, 2024; Harvard Summer School, 2023; Marzuki et al., 2023; MSU Today, 2023; University of Frankfurt, 2023; University of North Carolina Writing Center, 2023).

AI use in writing presents both advantages and ethical concerns. One major issue is plagiarism and originality. The ease of generating content with AI raises doubts about the authenticity of students' work. Ensuring AI-assisted work remains original and properly cited is necessary to maintain academic integrity. Another concern is over-reliance on AI tools, which could reduce students' ability to develop independent critical thinking and writing skills. Additionally, while AI can help address language gaps, it may not fully capture language nuances, leading to misunderstandings or miscommunications if used improperly (Guo & Zaini, 2024; Harvard Summer School, 2023; Marzuki et al., 2023; MSU Today, 2023; University of Frankfurt, 2023; University of North Carolina Writing Center, 2023).

To maximize the benefits of AI in English writing and reduce its risks, educators and researchers must create frameworks for responsible integration. It is important to balance AI assistance with critical thinking, encouraging students to use AI tools as aids, not substitutes for human judgment and creativity. This balance will help students develop both technical writing skills and critical thinking. Clear ethical guidelines for AI use in academic writing must be set to prevent plagiarism and ensure proper acknowledgment of AI-generated content. Ongoing evaluation of AI tools' impact on student writing outcomes is necessary to adjust educational strategies and improve their use. AI in English writing offers significant benefits, such as improved quality and efficiency. However, it also raises concerns about plagiarism, over-reliance, and language limitations. Addressing these issues and integrating AI responsibly into educational practices will improve student learning outcomes and support critical thinking and originality. Future research should focus on developing ethical frameworks for AI use and assessing its long-term impact on academic writing skills (Guo & Zaini, 2024; Harvard Summer School, 2023; Marzuki et al., 2023; MSU Today, 2023; University of Frankfurt, 2023; University of North Carolina Writing Center, 2023).

Academic writing has long been a core skill in higher education, particularly for postgraduate students, many of whom are non-native English speakers. Mastery of English academic writing is often seen as necessary for communicating complex ideas, engaging in scholarly discourse, and contributing to one’s field. However, the rise of artificial intelligence (AI) tools questions traditional views of academic writing. These tools can generate coherent content, correct grammar, and suggest improvements to writing style. Given the growing reliance on AI, the need to develop strong writing skills is uncertain, as AI can perform many of these tasks effortlessly (Guo & Zaini, 2024; Harvard Summer

School, 2023; Marzuki et al., 2023; MSU Today, 2023; University of Frankfurt, 2023; University of North Carolina Writing Center, 2023).

The growing prevalence of artificial intelligence (AI) in higher education has prompted considerable scholarly attention, particularly with regard to its role in supporting and transforming academic writing. Researchers have sought to map the breadth of AI's contributions across the research process, identify the pedagogical implications of its adoption, and interrogate the ethical questions its use raises.

Research shows that AI can assist students with writing tasks. AI helps students generate content and correct language issues, allowing them to focus on refining their ideas rather than dealing with technical writing concerns. Although AI tools improve productivity and accuracy, concerns remain about their potential to reduce the deeper learning that academic writing promotes. AI can enhance grammar and structure, but it cannot perform higher-order thinking required for academic writing, such as constructing original arguments or critically analyzing sources. Similarly, over-reliance on AI may weaken students' ability to write effectively without technological support (Guo & Zaini, 2024; Harvard Summer School, 2023; Marzuki et al., 2023; MSU Today, 2023; University of Frankfurt, 2023; University of North Carolina Writing Center, 2023).

Khalifa and Albadawy (2024) conducted a systematic review of literature drawn from major academic databases, identifying six principal domains in which AI meaningfully supports academic writing: the generation of ideas and research design, content development and structural organisation, literature review and synthesis, data management and analysis, editing and publication support, and communication and ethical compliance. Their findings position tools such as ChatGPT as having substantial utility across these domains, whilst acknowledging that sustaining academic integrity and preserving the centrality of human judgement remain ongoing challenges. This broad mapping of AI's functional contributions provides a useful foundation for understanding the scope of its influence on scholarly practice.

The nature of how researchers and students actually interact with AI tools has also attracted empirical investigation. Nguyen et al. (2024) examined the writing behaviours of ten doctoral students working with a generative AI-assisted writing tool, analysing over 600 recorded interactions through a layered methodology that combined quantitative content analysis, Hidden Markov Modelling, and process mining. Their findings indicated that students who engaged in iterative, highly interactive exchanges with the AI tool generally produced stronger written outputs, whilst those who treated AI as a passive information source and maintained a largely linear writing process achieved comparatively lower performance. This distinction between active collaboration and passive consumption of AI-generated content carries significant implications for how institutions might encourage productive human-AI engagement in academic contexts.

Student perceptions of generative AI in writing tasks have been further explored by Kim et al. (2025), who conducted in-depth interviews with twenty Chinese higher education students following their use of a ChatGPT-embedded writing system. Students articulated expectations that AI should fulfil multiple functions simultaneously — operating as a writing assistant, a virtual tutor, and a digital peer. Perceived benefits spanned improvements to the writing process itself, enhanced written output, and positive effects on students' affective engagement with writing tasks. Nevertheless, students also identified a range of challenges attributable to the AI system, to their own capacities as users, and to the nature of the tasks undertaken. These nuanced findings highlight that student experience of AI-assisted writing is neither uniformly positive nor straightforwardly negative, and that context plays a considerable role in shaping outcomes.

Alongside the benefits identified in the literature, concerns regarding the effect of AI tools on the development of writing skills and critical thinking have been prominently raised. Deep and Chen (2025) synthesised peer-reviewed literature on AI's role in writing pedagogy, finding that whilst tools such as Grammarly, ChatGPT, and QuillBot can offer meaningful support — including personalised feedback, improved writing fluency, and reduced cognitive load during drafting — they also risk undermining the development of independent writing competencies when students use them to generate complete texts with minimal personal engagement. The authors emphasise that careful and deliberate integration of AI into curricula is essential to preserving both academic integrity and students' capacity for original thought.

This concern is echoed in pedagogical research examining student attitudes towards AI-generated writing. Van Niekerk et al. (2025) employed an active learning intervention in which students used ChatGPT to produce academic papers and subsequently critiqued the outputs, applying the Technology Acceptance Model to assess shifts in students' perceptions of the tool's usefulness and ease of use. Their findings suggest that direct, reflective engagement with AI-produced content can meaningfully alter students' intentions regarding its use, pointing to the value of structured, critical classroom encounters with generative AI as a means of fostering more discerning adoption.

The ethical dimensions of AI use in academic writing constitute a substantial strand of the literature. Ateriya et al. (2025) reviewed literature from across the fields of ethics, AI research, and academic publishing, identifying concerns surrounding intellectual property, attribution in collaboratively produced work, and the broader transparency of AI's role in manuscript preparation. Their analysis further highlights how unequal access to AI tools risks deepening existing disparities within academic publishing, particularly between well-resourced and under-resourced research communities. The authors call for the establishment of comprehensive guidelines to promote accountable and equitable use of AI in scholarly writing.

Questions of transparency are similarly foregrounded by Tang et al. (2024), who examined the extent to which academic journals require authors to declare their use of generative AI. Their survey of 125 nursing journals found that fewer than two-fifths explicitly required such declarations, with an even lower proportion observed amongst general medicine journals. The authors argue that mandatory disclosure of AI use is fundamental to maintaining the credibility of published research, and further suggest that extending such requirements to peer reviewers could strengthen the integrity of the review process more broadly.

Finally, Cheng et al. (2025) offer a practice-oriented contribution, discussing how large language model-based tools can be employed in ethically sound ways across the academic writing process. Noting documented issues with plagiarism, factual inaccuracy, and the fabrication of references, the authors delineate three categories of legitimate AI use and propose four guiding principles to support researchers in producing high-quality outputs without compromising scholarly standards. Their work reflects a broader recognition in the literature that the challenge facing the academic community is not whether to use AI, but how to do so responsibly and with appropriate transparency.

The use of AI in academic writing raises important questions about how educational institutions should balance technological advancements with the development of traditional writing skills. Some view AI as a helpful tool, especially for students with language difficulties, and others have concerns that over-reliance on AI may limit the development of critical thinking. For non-native English speakers, this issue is amplified by difficulties in mastering academic writing in English. This study aims to explore whether non-native postgraduate students still view writing skills as necessary or if they consider AI tools

sufficient substitutes in academic contexts (Guo & Zaini, 2024; Harvard Summer School, 2023; Marzuki et al., 2023; MSU Today, 2023; University of Frankfurt, 2023; University of North Carolina Writing Center, 2023).

Taken together, this body of literature reveals a field navigating significant opportunity alongside considerable complexity. Whilst AI tools demonstrably support efficiency and breadth across multiple dimensions of academic writing, their uncritical adoption poses risks to skill development, integrity, and equity. The emerging consensus across these studies points to the need for clear institutional guidelines, critical pedagogical frameworks, and ongoing dialogue between researchers, educators, and publishers.

Methodology

A single-method approach was employed in this study, utilizing a quantitative data collection technique. The participants consisted of 16 Chinese postgraduate students enrolled in an English-medium program at an international university in Thailand. These students completed a questionnaire designed to assess their attitudes toward academic writing skills and their use of AI tools in the writing process. The questionnaire comprised 15 Likert-scale items, allowing for the measurement of participants' responses across various dimensions of the study. The internal consistency of the questionnaire was measured using Cronbach's alpha, yielding a reliability coefficient of 0.66.

Ethical guidelines were strictly followed throughout the study. Participation in the study was voluntary, and all participants were informed of the purpose of the research and assured that their responses would remain confidential. Informed consent was obtained from all participants prior to data collection, and they were reminded that they had the right to withdraw from the study at any time without penalty. Data was anonymized to protect the privacy of the participants.

Results and Discussion

This section presents the results of the study, which aimed to explore the perceptions of Chinese postgraduate students regarding English academic writing skills in the context of the increasing use of artificial intelligence (AI) tools. The findings are based on the responses to a 15-item Likert-scale questionnaire, which assessed participants' attitudes towards academic writing and their use of AI in the writing process. The results are discussed in terms of participants' views on the importance of writing skills, the role of AI tools in supporting or hindering their academic writing, and how these perceptions align with existing literature on the evolving relationship between technology and academic writing practices.

1) I believe that strong academic writing skills are essential for success in my postgraduate studies.
Strongly Disagree=0%, Disagree=0%, Neutral=6.3%, Agree=12.5%, Strongly Agree=81.3%, Mean=4.75, Standard Deviation=.58

2) AI tools like ChatGPT can be helpful in improving my academic writing.
Strongly Disagree=0%, Disagree=0%, Neutral=31.3%, Agree=18.8%, Strongly Agree=50%, Mean=4.19, Standard Deviation=.91

3) I often use AI tools to help me write academic papers or essays.
Strongly Disagree=0%, Disagree=6.3%, Neutral=31.3%, Agree=50%, Strongly Agree=12.5%, Mean=3.69, Standard Deviation=.79

4) I feel confident in my ability to write well in English without the help of AI tools.
Strongly Disagree=0%, Disagree=6.3%, Neutral=75%, Agree=18.8%, Strongly Agree=0%, Mean=3.13, Standard Deviation=.50

5) AI tools are a good substitute for developing strong writing skills in English.
Strongly Disagree=0%, Disagree=6.3%, Neutral=37.5%, Agree=43.8%, Strongly Agree=12.5%, Mean=3.63, Standard Deviation=.81

6) Using AI tools for academic writing helps me focus more on the content of my ideas rather than language mechanics.
Strongly Disagree=0%, Disagree=0%, Neutral=31.3%, Agree=31.3%, Strongly Agree=37.5%, Mean=4.06, Standard Deviation=.85

7) I believe that academic writing requires more than just grammar and structure; it involves critical thinking and originality.
Strongly Disagree=0%, Disagree=0%, Neutral=6.3%, Agree=25%, Strongly Agree=68.8% Mean=4.63, Standard Deviation=.62

8) I worry that relying on AI too much for academic writing may lead to plagiarism or unethical practices.
Strongly Disagree=0%, Disagree=0%, Neutral=12.5%, Agree=31.3%, Strongly Agree=56.3%, Mean=4.44, Standard Deviation=.73

9) My academic writing has improved because of the assistance provided by AI tools.
Strongly Disagree=0%, Disagree=6.3%, Neutral=12.5%, Agree=50%, Strongly Agree=31.3%, Mean=4.06, Standard Deviation=.85

10) I believe that AI cannot replace the cognitive skills required for producing original, well-argued academic work.
Strongly Disagree=0%, Disagree=6.3%, Neutral=50%, Agree=18.8%, Strongly Agree=25% Mean=3.63, Standard Deviation=.96

11) AI tools can support non-native English speakers in overcoming language barriers and improving writing proficiency.
Strongly Disagree=0%, Disagree=0%, Neutral=12.5%, Agree=56.3%, Strongly Agree=31.3%, Mean=4.19, Standard Deviation=.66

12) Academic institutions should offer more guidance on the ethical use of AI in academic writing.
Strongly Disagree=0%, Disagree=0%, Neutral=37.5%, Agree=37.5%, Strongly Agree=25% Mean=3.88, Standard Deviation=.81

13) I feel that academic writing skills are still more important than using AI tools for producing essays or papers.
Strongly Disagree=0%, Disagree=0%, Neutral=31.3%, Agree=31.3%, Strongly Agree=37.5%, Mean=4.06, Standard Deviation=.85

14) I would prefer to rely on my own writing skills rather than using AI to generate content for academic assignments.
Strongly Disagree=0%, Disagree=25%, Neutral=50%, Agree=25% , Strongly Agree=0%
Mean=3.00, Standard Deviation=.73

15) I think that AI tools should be integrated into academic writing instruction as a complementary tool, not a replacement for learning how to write.
Strongly Disagree=0%, Disagree=0%, Neutral=6.3%, Agree=37.5%, Strongly Agree=56.3%, Mean=4.50, Standard Deviation=.63

The results from the Likert scale questionnaire, which explored the perceptions of Chinese nationals studying a postgraduate program in Thailand regarding English academic writing skills in the age of AI, provide insightful data on their attitudes and experiences with AI tools in academic writing.

Overall, the majority of participants strongly believe that strong academic writing skills are essential for success in their studies, with 81.3% agreeing strongly (Mean = 4.75, Standard Deviation = .58). This highlights the participants' recognition of the importance of foundational writing abilities in their postgraduate success. In contrast, when asked about the helpfulness of AI tools in improving academic writing, 50% of participants strongly agreed, and 18.8% agreed, suggesting a moderate level of enthusiasm toward using AI for writing support (Mean = 4.19, Standard Deviation = .91).

However, participants' usage of AI tools for writing appears to be more limited. Only 12.5% strongly agreed, and 50% agreed that they often use AI tools for academic papers or essays (Mean = 3.69, Standard Deviation = .79). This suggests that while AI is viewed positively, its actual use among the participants is not yet widespread. Similarly, when asked about their confidence in writing well in English without the help of AI, the majority (75%) were neutral, indicating a lack of strong confidence (Mean = 3.13, Standard Deviation = .50).

Participants seem to acknowledge the limitations of AI in fully replacing human skills. While 43.8% agreed and 12.5% strongly agreed that AI tools are a good substitute for developing strong writing skills, 37.5% were neutral on this matter (Mean = 3.63, Standard Deviation = .81). This reflects a cautious stance on whether AI can entirely substitute for personal development in writing skills. In terms of content focus, 37.5% strongly agreed, and 31.3% agreed that using AI helps them focus more on content rather than language mechanics (Mean = 4.06, Standard Deviation = .85).

There is strong recognition among participants that academic writing involves more than just grammar and structure. A large majority (68.8%) strongly agreed, and 25% agreed with the statement that academic writing requires critical thinking and originality (Mean = 4.63, Standard Deviation = .62). This indicates an understanding of the broader scope of academic writing skills, extending beyond mechanical language use. Similarly, when asked about concerns regarding AI leading to unethical practices like plagiarism, 56.3% strongly agreed and 31.3% agreed (Mean = 4.44, Standard Deviation = .73), revealing a high level of concern about the ethical implications of relying on AI for academic writing.

Regarding improvements in their writing due to AI assistance, 31.3% strongly agreed and 50% agreed (Mean = 4.06, Standard Deviation = .85), suggesting that many participants felt AI had positively impacted their writing. However, a more critical viewpoint emerged when asked about AI's inability to replace cognitive skills for producing original academic work. Here, 25% strongly agreed and 18.8% agreed, but 50% remained neutral, pointing to an

underlying scepticism about AI's capacity to fully replicate human intellectual processes (Mean = 3.63, Standard Deviation = .96).

The responses to the statement regarding AI tools supporting non-native English speakers in overcoming language barriers were highly positive, with 56.3% agreeing and 31.3% strongly agreeing (Mean = 4.19, Standard Deviation = .66), emphasizing AI's role in facilitating language proficiency for non-native speakers. There was also significant support for academic institutions offering more guidance on the ethical use of AI, with 37.5% agreeing and 25% strongly agreeing (Mean = 3.88, Standard Deviation = .81), suggesting a demand for formalized guidance on AI usage in academic settings.

In terms of preferences for academic writing methods, participants generally expressed that writing skills were more important than AI tools for producing essays, with 37.5% strongly agreeing and 31.3% agreeing (Mean = 4.06, Standard Deviation = .85). However, when asked about reliance on AI, 50% were neutral, and only 25% agreed they would prefer to rely on their own writing skills over AI (Mean = 3.00, Standard Deviation = .73), indicating a divided stance on this issue.

Lastly, 56.3% strongly agreed, and 37.5% agreed that AI tools should be integrated into academic writing instruction as a complementary tool rather than a replacement for learning to write (Mean = 4.50, Standard Deviation = .63), reflecting a consensus on the potential for AI to support, rather than replace, the development of writing skills.

In conclusion, while the participants value the importance of strong academic writing skills, they acknowledge the potential benefits and limitations of AI tools. AI is seen as a helpful complement to academic writing, especially for non-native speakers, but concerns about over-reliance and the ethical implications of AI use remain. Participants express a preference for a balanced approach, where AI tools enhance, rather than replace, the development of writing proficiency.

Conclusion and Suggestions

This study has explored the perceptions of Chinese postgraduate students studying in Thailand regarding their academic writing skills in the age of Artificial Intelligence (AI). The findings indicate that while students strongly recognize the importance of developing strong academic writing skills, many also see AI tools as useful aids for improving their writing, particularly in overcoming language barriers. However, concerns about over-reliance on AI, its potential to undermine critical thinking and originality, and ethical issues such as plagiarism remain prevalent. The study highlights the need for a balanced approach where AI tools are integrated as complementary resources rather than substitutes for essential writing skills.

Based on the findings of this study, several suggestions can be made for both educational institutions and students. First, academic institutions should consider providing more structured guidance on the ethical use of AI tools, particularly in the context of academic writing. This could include workshops or seminars on the responsible use of AI, plagiarism prevention, and developing critical thinking skills. Additionally, educators should continue to emphasize the importance of independent writing skills while integrating AI tools into the learning process as supportive aids rather than replacements. For students, it is crucial to maintain a balance between utilizing AI for writing assistance and actively working on improving their own writing abilities, ensuring that AI becomes a tool for enhancing, rather than replacing, their cognitive and writing skills.

Future research could expand on this study by examining a broader range of international students from different cultural and linguistic backgrounds to compare how perceptions of

AI in academic writing may differ. Additionally, longitudinal studies could investigate how students' attitudes and usage of AI tools evolve over time as they gain more experience with these technologies. Further exploration of the ethical implications of AI use in academic writing, such as its impact on plagiarism and originality, is also needed. Investigating the role of AI in specific academic disciplines, such as the sciences versus the humanities, could provide more nuanced insights into how AI tools are perceived and utilized in different fields.

Although this study provides valuable insights, several limitations must be acknowledged. First, the sample size was relatively small, consisting only of Chinese postgraduate students studying in Thailand, which limits the generalizability of the findings. The study's focus on a single group of international students may not fully represent the perspectives of other student populations. Additionally, the reliance on self-reported data may introduce bias, as participants may have answered based on social desirability or perceived expectations rather than their true feelings. Finally, the study did not explore the actual usage patterns of AI tools among students, meaning the results reflect perceptions rather than actual behaviours. Future research could address these limitations by incorporating a larger, more diverse sample and exploring actual AI usage in academic writing.

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